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Arthur D. Little, Inc, Cambridge, Mass.

Prepared for

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FOR
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CUMULATIVE REPORT NO. 2
PART I

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ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

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16. ABSTRACT

This cumulative report contains 26 current awareness documents prepared biweekly from 25 August 1975 through 9 August 1976 during the second year of a two year project. The purpose of this project was to provide the Office of Toxic Substances (OTS), U.S. Environmental Protection Agency with information on new uses of existing chemical products and with information of obvious potential environmental concern for both new and existing chemical products.

For each biweekly document a core list of approximately 80 journals was scanned for information of interest to OTS on more than 30 topics (compounds, classes of compounds, and subject areas, e.g., model ecosystems). Abstracts were prepared for all items selected and these abstracts were presented biweekly under the assigned topics. In addition, a "General Information" section was added to accommodate abstracts for topics not included in the original list of scanning topics. Biweekly subject indexes were cumulated for this annual compilation, and an author index was added.

17. KEY WORDS AND DOCUMENT ANALYSIS

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CURRENT AWARENESS SERVICE
FOR
TOXIC SUBSTANCES

CUMULATIVE REPORT NO. 2

PART I

November 1976

Contract No. 68-01-2694

Ernest W. Stalder
Project Officer

Office of Toxic Substances
Environmental Protection Agency
Washington, D.C. 20460

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FOREWORD

Cumulative Report No. 2 of the Current Awareness Service for Toxic Substances (CATS) covers the second year's service conducted for the Office of Toxic Substances (OTS) U.S. EPA under Contract No. 68-01-2694. The CATS is a scanning service of some 50 scientific journals, 30 trade journals, and reports of major federal, state, and local environmental agencies. Scanning topics comprise a list of some 30 to 40 chemicals, classes of chemicals, and general topics related to chemicals in the environment. Abstracts or summaries of items of interest were prepared, indexed by subject and author, and compiled into biweekly CATS Reports.

Mr. Ernest W. Stalder, Monitoring and Information Systems Branch, OTS, EPA Washington, DC is the Project Officer.

Ms. Virginia Valeri and Ms. Anne V. Quinn, Literature Research Section, Arthur D. Little, Inc. Cambridge, MA were the Contract Managers.

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SCANNING TOPICS +

1. Acetonitrile
2. Acrylonitrile
3. Arsenic
4. Aryl phosphates (phenyl, cresyl, mixed phenyl-cresyl)
5. Asbestos
6. Benzidine, and salts (hydrochloride, sulfate)
7. Boron
8. Brominated biphenyls
9. 3,3'-Dichlorobenzidine
10. Dioxane
11. Ethyleneimine
12. Flame retardants
13. Fluorocarbons
14. Haloethers
15. Hexachlorobenzene
16. Hexachlorobutadiene
17. Hydrazine, derivatives, and salts
    (*sym* and *unsym* - dimethyl, monomethyl)
18. Isocyanates (organic)
19. Liquefaction and gasification of coal
20. 4,4'-Methylenebis (2-chloroaniline) (MOCA)
21. Model Ecosystems
    (Environmental Fate Testing, Microecosystems)
22. Naphthylamines (alpha, beta, *N*-phenyl derivatives)
23. Nitrilotriacetic acid (NTA)
24. Optical brighteners
    (fluorescent whitening agents, fluorescent dyes)
25. Perchloroethylene
26. Phthalates (dioctyl, di-2-ethylhexyl)
27. Polyurethanes
28. beta-Propiolactone
29. Trichloroethylene
30. Shale oil -xtraction and refining
31. Vinyl chloride
32. Vinylidene chloride
33. Ethylene dibromide

*34. Nitrosamines

* - Each topic was on the scanning list for part, though not necessarily all, of the contract year.

+ - Within each Biweekly Report abstracts on the above listed topics appear in the order given

JOURNALS SCANNED

JOURNALS	PERIOD OF COVERAGE
Aerosol Age	August 1975 - July 1976 (except March, April)
Air Pollution Control Association. Journal	August 1975 - June 1976
Ambio	Vol. 4, No. 5 and 6, 1975; Vol. 5, No. 2, 1976
American Chemical Society. Journal	August 1975 - July 1976
American Dyestuff Reporter	August - November 1975; March - July 1976
American Industrial Hygiene Association. Journal	August 1975 - July 1976
American Institute of Chemical Engineers Journal	September 1975 - July 1976 (except March)
American Journal of Public Health	August, October 1975; January, February, April, May 1976
American Medical Association. Journal	November 10, 1975 - July 19, 1976 (except February 30, April 22, 30, June 14, July 12)
American Review of Respiratory Disease	August 1975 - July 1976
Analytical Biochemistry	October 1975 - June 1976
Analytical Chemistry	August 1975 - August 1976 (except May)
Annals of Occupational Hygiene	Vol. 18, Nos. 1 - 4, 1975
Anti-Corrosion Methods and Materials	August 1975 - May 1976
Archives of Environmental Contamination and Toxicology	Vol. 3, Nos. 2 and 3, 1975
Archives of Environmental Health	August 1975 - August 1976
Association of Official Analytical Chemists. Journal	July 1975 - May 1976
Atmospheric Environment	August 1975 - May 1976
Biochemistry	August 1975 - June 1976
Bioinorganic Chemistry	Vol. 4, No. 2 - 4, 1975
Bioorganic Chemistry	Vol. 4, Nos. 1 - 4, 1975
Biotechnology and Bioengineering	August 1975 - July 1976 (except January)
British Journal of Cancer	October 1975 - May 1976
Bulletin of Environmental Contamination and Toxicology	July 1975 - July 1976
Cancer Research	August - October 1975; April - July 1976
Chemical Engineering	4 August 1975 - 2 August 1976 (except 1, 15 September, 22 December, 19 July)
Chemical and Engineering News	August 1975 - July 1976
Chemical Engineering Progress	August 1975 - July 1976
Chemical Reviews	August 1975 - August 1976
Chemical Week	6 August 1975 - 21 July 1976 (except 7 July)
Chemistry	September 1975 - July 1976
Chemistry and Industry. London	20 December 1975 - 3 July 1976
Chemosphere	August 1975 - June 1976
Clinical Pharmacology and Therapeutics	October 1975 - July 1976
Coal Age	August 1975 - July 1976 (except May)
Combustion	August 1975 - July 1976 (except May)
Combustion and Flame	August 1975 - April 1976
Combustion Science and Technology	Vol. 11, Nos. 3 and 4, 1975; Vol. 12, Nos. 1 - 3, 1976
Corrosion	September 1975 - June 1976
Environmental Health Perspectives	December 1975; February 1976
Environmental Research	August 1975 - June 1976 (except April)
Environmental Science and Technology	August 1975 - August 1976
European Journal of Cancer	February - July 1976
European Journal of Pharmacology	January - July 1976 (except April)
Europlastics	September 1975 - April 1976 (except December)
Farm Chemicals	January - March 1976
Fire Journal	September 1975 - July 1976
Food and Cosmetics Toxicology	August 1975 - June 1976
Geophysical Research Letters	June 1975 - April 1976
Household and Personal Products Industry	August 1975 - July 1976 (except December)
Hydrocarbon Processing	August 1975 - June 1976 (except April)
Industrial Research	January - July 1976 (except May)
Industrial Water and Wastes	July, August, September, October 1975
International Journal of Cancer	July 1975 - June 1976
Journal of Agricultural and Food Chemistry	September 1975 - June 1976
Journal of Coatings Technology	January - July 1976
Journal of Experimental Marine Biology and Ecology	July - December 1975
Journal of Geophysical Research	Vol. 81, Nos. 1 - 14, January - May 1976 (except Nos. 3, 12, 13)
Journal of Occupational Medicine	January - June 1976
Journal of Paint Technology (Title changed to : Journal of Coatings Technology)	August - December 1975
Journal of Polymer Science	August 1975 - July 1976
Journal of Reproduction and Fertility	October - December 1975)
Journal of Toxicology and Environmental Health	September 1975 - May 1976
Lancet	2 August 1975 - 17 July 1976 (except 9 August, 26 June, 10 July)
Marine Pollution Bulletin	June 1975 - January 1976 (except September)
Metal Progress	December 1975 - June 1976
Mining Congress Journal	December 1975 - April 1976
Modern Packaging	August 1975 - July 1976 (except December)
Modern Plastics	August 1975 - July 1976 (except May)

JOURNALS	PERIOD OF COVERAGE
Mount Sinai Journal of Medicine	January - April 1976
Mutation Research	November 1975 - June 1976 (except May)
Nature	7 August 1975 - 29 July 1976 (except 20 November)
New England Journal of Medicine	8 April - 5 August 1976
New Scientist	22 January, 26 February, 6 May 1976
Pollution Engineering	August 1975 - July 1976
Pure and Applied Geophysics	Vol. 113, Nos. 3 - 6, 1975; Vol. 114, No. 1, 1976
Quarterly Review of Biology	Vol. 50, No. 2 and 3, 1975; Vol. 51, No. 1, 1976
Reviews of Geophysics and Space Physics	February 1975 - February 1976
Rubber Age	August 1975 - June 1976
Science	1 August 1975 - 6 August 1976 (except 20 February)
Soap, Cosmetics Chemical Specialties	August 1975 - July 1976
Technical Association of the Pulp and Paper Industry	January, February, June 1976
Teratology	August 1975 - June 1976
Textile Chemists and Colorist	September 1975 - July 1976
Textile World	August 1975 - July 1976 (except September)
Toxicology and Applied Pharmacology	October 1975 - June 1976
U.S. National Cancer Institute. Journal	November 1975 - June 1976
Water and Wastes Engineering	January - March 1976
Water Pollution Control Federation. Journal	August 1975 - May 1976
Water Research	August 1975 - July 1976

JOURNAL ABBREVIATIONS *

AIChE J.	American Institute of Chemical Engineers Journal
AIR/WATER Pollut. Rept.	AIR/WATER Pollution Report
Am. Ceram. Soc., Bull.	American Ceramic Society. Bulletin
Am. Dyest. Rep.	American Dyestuff Reporter
Am. Ind. Hyg. Assoc., J.	American Industrial Hygiene Association. Journal
Am. J. Pathol.	American Journal of Pathology
Am. Rev. Respir. Dis.	American Review of Respiratory Disease
Anal. Chem.	Analytical Chemistry
Ann. N.Y. Acad. Sci.	New York Academy of Sciences. Annals
Ann. Occup. Hyg.	Annals of Occupational Hygiene
Annu. Rev. Pharmacol. Toxicol.	Annual Review of Pharmacology and Toxicology
Appl. Environ. Microbiol.	Applied and Environmental Microbiology
Arch. Environ. Contam. Toxicol.	Archives of Environmental Contamination and Toxicology
Arch. Environ. Health	Archives of Environmental Health
Arch. Toxicol.	Archives of Toxicology
Atmos. Environ.	Atmospheric Environment
Biochem. Biophys. Res. Commun.	Biochemical and Biophysical Research Communications
Biochem. Pharmacol.	Biochemical Pharmacology
Br. J. Cancer	British Journal of Cancer
Br. Med. J.	British Medical Journal
Bull. Environ. Contam. Toxicol.	Bulletin of Environmental Contamination and Toxicology
Bull. N.Y. Acad. Med.	New York Academy of Medicine. Bulletin
Can. Chem. Process.	Canadian Chemical Processing
Can. J. Biochem.	Canadian Journal of Biochemistry
Cancer Res.	Cancer Research
Chem. Eng.	Chemical Engineering
Chem. Eng. News	Chemical and Engineering News
Chem. Eng. Prog.	Chemical Engineering Progress
Chem. Ind. (London)	Chemistry and Industry. London
Chem. Week	Chemical Week
Clin. Sci. Mol. Med.	Clinical Science and Molecular Medicine
Environ. Health Lett.	Environmental Health Letter
Environ. Health Perspect.	Environmental Health Perspectives
Environ. Rep.	Environment Report
Environ. Res.	Environmental Research
Environ. Sci. Technol.	Environmental Science and Technology
Eur. J. Cancer	European Journal of Cancer
Eur. Plast. News	European Plastics News
Farm Chem.	Farm Chemicals
Fed. Proc., Fed. Am. Soc. Exp. Biol.	Federation of American Societies for Experimental Biology. Federation Proceedings
Fed. Regist.	Federal Register
Food Cosmet. Toxicol.	Food and Cosmetics Toxicology
Geophys. Res. Lett.	Geophysical Research Letters
Household and Pers. Prod. Ind.	Household and Personal Products Industry
Hydrocarbon Process.	Hydrocarbon Processing
Ind. Eng. Chem., Process Des. Dev.	Industrial and Engineering Chemistry, Process Design and Development
Int. J. Cancer	International Journal of Cancer
Job Saf. Health Rep.	Job Safety and Health Report
J. Agric. Food Chem.	Journal of Agricultural and Food Chemistry
J. Air Pollut. Control Assoc.	Air Pollution Control Association. Journal
J. Am. Dent. Assoc.	American Dental Association. Journal
J. Am. Med. Assoc.	American Medical Association. Journal
J. Am. Water Works Assoc.	American Water Works Association. Journal
J. Assoc. Off. Anal. Chem.	Association of Official Analytical Chemists. Journal
J. Coat. Technol.	Journal of Coatings Technology
J. Geophys. Res.	Journal of Geophysical Research
J. Nat. Cancer Inst.	U.S. National Cancer Institute. Journal
J. Nutr.	Journal of Nutrition
J. Occup. Med.	Journal of Occupational Medicine
J. Paint Technol.	Journal of Paint Technology
J. Pharm. Sci.	Journal of Pharmaceutical Sciences
J. Polym. Sci., Polym. Chem. Ed.	Journal of Polymer Science. Polymer Chemistry Edition
J. Polym. Sci., Lett. Ed.	Journal of Polymer Science. Polymer Letters Edition
J. Toxicol. Environ. Health	Journal of Toxicology and Environmental Health
J. Water Pollut. Control Fed.	Water Pollution Control Federation. Journal

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*Includes some journals not on core list of journals scanned

Mar. Pollut. Bull.	Marine Pollution Bulletin
Med. Lav.	Medicina del Lavoro
Mod. Packag.	Modern Packaging
Mod. Plast.	Modern Plastics
Mt. Sinai J. Med.	Mount Sinai Journal of Medicine
Mutat. Res.	Mutation Research
N. Engl. J. Med.	New England Journal of Medicine
NYS Environ.	New York State Environment
Occup. Health Saf. Lett.	Occupational Health and Safety Letter
Pollut. Eng.	Pollution Engineering
Proc. R. Soc. Med.	Royal Society of Medicine, London. Proceedings
Proc. Soc. Exp. Biol. Med.	Society for Experimental Biology and Medicine. Proceedings
Pure Appl. Chem.	Pure and Applied Chemistry
Res./Dev.	Research/Development
Rev. Geophys. Space Phys.	Reviews of Geophysics and Space Physics
Schweiz. Med. Wochenschr.	Schweizerische Medinische Wochenschrift
Sci. Am.	Scientific American
Sci. News	Science News
Soap, Cosmet. Chem. Spec.	Soap, Cosmetics Chemical Specialties
South. Med. J.	Southern Medical Journal
Technol. Rev.	Technology Review
Tetrahedron Lett.	Tetrahedron Letters
Text. Chem. Color.	Textile Chemist and Colorist
Text. World	Textile World
Toxicol. Appl. Pharmacol.	Toxicology and Applied Pharmacology
Water Res.	Water Research

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52-0001 ACETONITRILE, source of carbon and nitrogen for growth of *Nocardia rhodochrous* LL100-21
41-0028 α-ACETOXYNITROSOPYRROLIDINE, mutagenic *per se* requiring no liver activation
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32-0002 ARSENIC, detection in surface water by atomic absorption

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35-0039	DIETHYLNITROSAMINE, factors affecting metabolism and mutagenicity
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37-0036	DIMETHYLNITROSAMINE, DNA damage in mouse organs
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39-0033	ENERGY, Ocean Thermal Energy Conversion proposes use of the sea as a heat source and heat sink for generating electricity
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41-0040	ENERGY, six ocean energy sources (tides, waves, salinity gradients, currents, winds, and bioconversion) are added to ocean thermal energy conversion as potential means of exploiting energy from oceans
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35-0044	FERRIC OXIDE, carcinogenic and cocarcinogenic effects of inhalation on Syrian hamsters
35-0008	FIRE-RETARDANT ADDITIVES, Diamond Shamrock Corp.'s Houston, Texas plant scheduled for 1977 opening
29-0006	FIRE-RETARDANT FABRICS, contamination with glycerine, hand lotions and baby oil counteracts fire retardancy
49-0012	FIRE RETARDANTS, proceedings of international symposium now available
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42-0007	FLAME RETARDANT, absorption of tris (2,3-dibromylpropyl) phosphate from treated fabric
43-0008	FLAME RETARDANTS, carpets and rugs captured about 75% of 1975 market
29-0006	FLAME RETARDANTS, contamination of treated fabrics with glycerine, hand lotions and baby oil affects fabric flame resistance
41-0010	FLAME RETARDANTS, environmental chemistry
47-0010	FLAME RETARDANTS, expanded facilities at Michigan Chemical Corporation's El Dorado, Arkansas facilities will be use to increase production of fireMaster 680 and other flame retardants
30-0011	FLAME RETARDANTS, fibers and textiles
36-0005	FLAME RETARDANTS, foreign organic fire resistant polymers
30-0010	FLAME RETARDANTS, intumescent coatings may cut into market for plastics
29-0005	FLAME RETARDANTS, intumescent coatings on plastics reduce smoke evolution
41-0008	FLAME RETARDANTS, major component of a polybrominated biphenyl industrial product indentified
43-0008	FLAME RETARDANTS, market demand may soar to about 500 million lb/year by 1980
30-0010	FLAME RETARDANTS, market potential in plastics
35-0009	FLAME RETARDANTS, Mobil Chemical plans to be onstream in 1977 with new trimethyl phosphite plant in Charleston, S.C.
31-0008	FLAME RETARDANTS, new brominated acrylic monomers available from Great Lakes Chemical Corp.
47-0011	FLAME RETARDANTS, new non-toxic water soluble complex phosphonate ester (Poly-Gard 123) for polyesters is now offered by Hamilton-Auslander Mfg. Co. for children's sleepwear, household fabrics, and camping equipment
45-0010	FLAME RETARDANTS, new plant planned by Michigan Chemical
31-0010	FLAME RETARDANTS, new phosphoramide derivatives are effective for cottons
30-0010	FLAME RETARDANTS, new products still based on bromine, phosphorus, and antimony oxide
27-0008	FLAME RETARDANTS, new vinyl chloride-containing terpolymer for molding and extrusion applications
45-0011	FLAME RETARDANTS, Olin Chemicals new plant for production

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33-0009	FLAME RETARDANTS, planned additional capacity for trimethyl phosphite by Mobil Chemical will be used in part to manufacture FR's
45-0008	FLAME RETARDANTS, potential carcinogenics
48-0009	FLAME RETARDANTS, potential environmental hazards review
41-0007	FLAME RETARDANTS, potential toxicity and teratogenicity in rodents of a commercial polybrominated biphenyl product
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36-0006	FLAME RETARDANTS, UM & M's all-cotton children's sleepwear fabric finished with Fire Stop, a tetrakis hydroxymethyl phosphonium chloride (THPC) derived finish
35-0010	FLAME RETARDANTS, use in fighting forest fires estimated at over 20 million gal/yr
49-0012	FLAMMABILITY, proceedings of international symposium now available
27-0016	FLUORESCENT WHITENING AGENTS, accumulation in fish tissue not significant
27-0017	FLUORESCENT WHITENING AGENTS, non-phototoxic and non-contributing to photocarcinogenesis in skin tests on mice
37-0025	FLUORESCENT WHITENING AGENTS, not likely to enter groundwater supplies via rainwater leaching of detergent sludge
27-0017	FLUORESCENT WHITENING AGENTS, photocarcinogenesis studies on mouse skin
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37-0025	FLUORESCENT WHITENING AGENTS, removal from wastewater
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34-0015	FLUORIDES, NCI concludes water fluoridation not cause of cancer
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27-0010	FLUOROCARBON BAN would affect carbon tetrachloride market
28-0012	FLUOROCARBON PROPELLANTS, FDA orders companies to submit drug product information
28-0007	FLUOROCARBON PROPELLANTS, potential corrosion of aerosol containers limits use in oven cleaner formulations
42-0010	FLUOROCARBONS, adsorption on activated carbon
47-0016	FLUOROCARBONS, aerosol production in free world exclusive of United States and Canada climbed by 14% in 1974 over 1973 production
46-0016	FLUOROCARBONS, Allied Chemical and Du Pont are working to develop stratospherically safe fluorocarbons pending possible government ban on use of trichloromono- and dichlorodifluoromethane
31-0017	FLUOROCARBONS, alternative propellants for F-11 and F-12 include F-21 and F-22
37-0019	FLUOROCARBONS, ammonia-HCl sink for chlorine is ruled out
46-0017	FLUOROCARBONS, annual and cumulative production and sales data from start of commercial production through 1975 now available from MCA
34-0004	FLUOROCARBONS, atmospheric concentration
30-0012	FLUOROCARBONS, atmospheric concentration effects on world's temperature
40-0018	FLUOROCARBONS, blowing agents for new polyurethane foam in aerosol can dispenser
31-0011	FLUOROCARBONS, breakdown by sunlight in upper atmosphere
40-0013	FLUOROCARBONS, British researchers find evidence of possible 10% depletion of ozone layer but anticipate allowing 10 years before restricting manufacture of some fluorocarbons
48-0011	FLUOROCARBONS, British researchers support theory that chlorine nitrate reduces stratospheric ozone loss
35-0011	FLUOROCARBONS, comparison of distribution of F-11 and krypton-85 in atmosphere may shed light on stratospheric ozone depletion problem
47-0013	FLUOROCARBONS, confusion regarding effects on ozone layer
43-0013	FLUOROCARBONS, correlation between aerosol usage and respiratory symptoms in humans
37-0017	FLUOROCARBONS, CPSC rejects petition to ban use in aerosol products
46-0019	FLUOROCARBONS, decreased U.S. production of aerosols due to ozone controversy is expected to recover by 1980
47-0014	FLUOROCARBONS, despite new theory of persistence of chlorine nitrates in stratosphere acting as a sink for liberated chlorine Rowland and Molina are pushing for fluorocarbon ban
37-0011	FLUOROCARBONS, distribution and fate of inhaled compounds in animals
40-0014	FLUOROCARBONS, drawbacks of alternative propellants such as CO_2 or hydrocarbons may be lessened by addition of methylene chloride
47-0017	FLUOROCARBONS, drop of 14% in 1975 U.S. aerosol production compared to 1974 is blamed on general economic conditions as well as the ozone depletion controversy
39-0009	FLUOROCARBONS, economic impacts of bans on their use
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31-0011	FLUOROCARBONS, effects of temperature on breakdown in stratosphere
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42-0008	FLUOROCARBONS, electron capture gas chromatography as possible means of determining oceanic concentrations of halogenated compounds
37-0017	FLUOROCARBONS, EPA urges use of alternatives in aerosol pesticides
40-0008	FLUOROCARBONS, estimated stratospheric concentration of gaseous chlorine compounds
35-0012	FLUOROCARBONS, expected Alaskan volcano eruption may provide test of stratospheric ozone depletion theory
31-0017	FLUOROCARBONS, F-22 seen as less toxic than F-11 and F-12 aerosol propellants
47-0013	FLUOROCARBONS, formation of chlorine nitrate may tie up chlorine liberated from fluorocarbons and cut down amount of ozone destroyed
46-0015	FLUOROCARBONS, Government may act by end of 1976 to ban fluorocarbon propellants giving industry a two-or-three year deadline

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43-0012	FLUOROCARBONS, harmful biological effects predicted by ozone depletion theories seen as premature and misleading
47-0015	FLUOROCARBONS, in midst of continuing confirmations and contradictions on the ozone depletion theory the U.S. consumer continues to purchase aerosol products
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46-0019	FLUOROCARBONS, industry is working on safe nonchlorofluorocarbons for aerosols
37-0016	FLUOROCARBONS, infrared measurement in atmosphere
48-0010	FLUOROCARBONS, insufficient measurements on past ozone levels cast doubts on man's ability to permanently modify the ozone layer
30-0016	FLUOROCARBONS, interactions with human and bovine globulins
30-0015	FLUOROCARBONS, interspecies differences may be factor in extrapolating animal data to predict human toxicity
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44-0014	FLUOROCARBONS, Kentucky producers and users fight proposed state ban citing economic and scientific reasons
31-0014	FLUOROCARBONS, malodors in propellant containing F-11 and 12 blended with nitromethane
31-0016	FLUOROCARBONS, mathematical computer simulates ozone region to study effects of
33-0012	FLUOROCARBONS, measurement of erythemally effective UV radiation and total ozone content
29-0008	FLUOROCARBONS, measurement of F-11 and F-12 in lower stratosphere confirms increased concentration from production and use
37-0010	FLUOROCARBONS, metabolic effects in various animals
43-0014	FLUOROCARBONS, mortality survey of pesticides including aerosols
47-0012	FLUOROCARBONS, NAS report on damage to ozone layer delayed
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33-0010	FLUOROCARBONS, NBS researchers report lower value for rate of reaction between chlorine and ozone
35-0013	FLUOROCARBONS, new calculations with F-12 and F-11 show temperature differences in stratosphere versus room temperature do not effectively change ozone depletion theory
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47-0013	FLUOROCARBONS, new data indicate only minor temperature changes from ozone depletion
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31-0017	FLUOROCARBONS, ozone controversy slows European aerosol market
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28-0011	FLUOROCARBONS, ozone theory criticized on several scores
28-0009	FLUOROCARBONS, Packaging Institute seminar airs science/industry approach to fluorocarbon/ozone controversy
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30-0013	FLUOROCARBONS, potential toxic thermal decomposition products
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46-0018	FLUOROCARBONS, research on hydrocarbons and dimethyl-ethers as alternative propellants supported by Japanese fluorocarbon producers
45-0016	FLUOROCARBONS, residence times in atmosphere based on reactivity
36-0012	FLUOROCARBONS, restricted use in aerosol spray cans passed by N.Y. Legislature
29-0009	FLUOROCARBONS, role in ozone depletion debated
31-0018	FLUOROCARBONS, seven new research contracts covering effects on Earth's atmosphere brings current research funding to $1.1-million
30-0015	FLUOROCARBONS, solubilities in blood and plasma of different species
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45-0013	FLUOROCARBONS, stratospheric concentrations of
46-0022	FLUOROCARBONS, stratospheric-ion chemistry relative to 11-year variation in polar ozone
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30-0014	FLUOROCARBONS, thermal decomposition products not considered hazard under normal use
30-0019	FLUOROCARBONS, tonnage reaching atmosphere each year is far beyond amount that the atmosphere can absorb
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31-0012	FLUOROCARBONS, ultraviolet photoabsorption
45-0015	FLUOROCARBONS, use as substitute surgical cleanser
30-0019	FLUOROCARBONS, Wisconsin bill proposes banning sales of aerosols by 1980
36-0008	FLUOROCARBONS 11 AND 12, effects on tracheobronchial particle deposition and clearance in donkeys
44-0013	FLUOROCARBONS 11 AND 12, much less significant contributors to atmospheric chlorine than carbon tetrachloride
51-0006	FLUOROCARBONS/OZONE, airborne research laboratory
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51-0008	FLUOROCARBONS/OZONE, industry research
51-0007	FLUOROCARBONS/OZONE, laboratory study
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41-0008 2,2',4,4',5,5'-HEXABROMOBIPHENYL, major component of flame retardant involved in accidental poisoning of cattle and other animals
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39-0031	POLYCHLORINATED BIPHENYLS, continued contamination of fish and wildlife spurs Monsanto to drop production of PCB's
35-0049	POLYCHLORINATED BIPHENYLS, Dow Chemical and McGraw Edison announce development of a butylated monochlorodiphenyl oxide as safe PCB substitute
29-0021	POLYCHLORINATED BIPHENYLS, excessively high levels in Lake Michigan fish adds to current hazard concern
28-0025	POLYCHLORINATED BIPHENYLS, HEW and other groups urge EPA to void GE's discharge permit
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27-0026	POLYVINYL CHLORIDE, FDA to ban some uses of PVC in food packaging
41-0025	POLYVINYL CHLORIDE, Goodyear's plans to expand dispersion resins capacity at Niagara Falls will restore over 50% of capacity lost after shut down last year
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28-0018	SHALE OIL, metallic contaminants and other impurities necessitate pretreatment of raw shale oil before refining
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35-0025	SHALE OIL, proposed 4,000 ton/day plant to be built by American Lurgi Corp. and Dravo Corp. will have low NO and SO_2 emissions
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41-0019	SYNTHETIC FUELS, ERDA anticipates passage soon by Congress of loan guarantee bill that will permit ERDA to launch commercialization program
35-0044	SYNTHETIC SMOG, carcinogenic and cocarcinogenic effects of inhalation on Syrian hamsters
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28-0022	2,3,7,8-TETRACHLORODIBENZO-p-DIOXIN (TCDD), wastes contaminant causes epidemic
49-0037	1,2,3,4-TETRACHLORO-5,5-DIMETHOXYCYCLOPENTADIENE, recent tests with rats and rabbits show this chemical to be very toxic by several routes of administration
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41-0018	TOLUENE DIISOCYANATE, Dow will enter field in 1976 and current producers are expanding capacities
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27-0021	TOLUENE DIISOCYANATE, trend towards MDI (methylene-based) chemistry instead of TDI reduces toxicity potential in polyurethane field
44-0022	TOLUENE 2,4-DIISOCYANATE, potential health hazard to workers in company producing urethane tracks for snowmobiles
40-0016	TOLUENE 2,4-DIISOCYANATE, potential toxic to workers in polyurethane foam molding department
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45-0039	TOXIC WASTES, potential hazards from disposal of
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41-0038	1,1,1-TRICHLOROETHANE, inhalation cited as cause of brain and central nervous system damage in law suit
37-0014	TRICHLOROETHYLENE, analysis in atmosphere by gas chromatography-mass spectrometry
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35-0018	TRICHLOROETHYLENE, description of PPG Industries' oxychlorination/oxyhydrochlorination process for manufacture of
45-0025	TRICHLOROETHYLENE, effect on embryonal and fetal development in rats and mice
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51-0021	TRICHLOROETHYLENE, hazards of substitute chemicals for decaffeinated coffee
38-0025	TRICHLOROETHYLENE, health survey indicates its nontoxicity in letterpress room of printing company

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33-0024	TRICHLOROETHYLENE, new proposed OSHA standards follow NIOSH and NCI alert of potential carcinogenicity
36-0026	TRICHLOROETHYLENE, occupational health aspects to be studied
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49-0006	TRI-o-CRESYL PHOSPHATE, biochemical mechanisms in delayed neurotoxicity
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42-0014	TRIMETHYLHYDRAZINE HYDROCHLORIDE, tumor inducer in mice
45-0007	TRIMETHYLPHOSPHATE, sterility induced by exposure to
35-0009	TRIMETHYLPHOSPHITE, Mobil Chemical's new Charleston, S.C. plant should be onstream in 1977
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43-0009	TRIS(2,3-DIBROMOPROPYL)PHOSPHATE, human contact sensitization
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30-0040	VINYL CHLORIDE, activated carbon personnel monitoring system
34-0009	VINYL CHLORIDE, Allied Chemicas's Baton Rouge plant with annual capacity of 300 million lb may be purchased by Robintech Inc.
37-0033	VINYL CHLORIDE, analysis by gas-liquid chromatography in PVC, food solvents, etc.

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35-0005	VINYL CHLORIDE, animal studies useful in predicting human carcinogenic effects
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32-0020	VINYL CHLORIDE, association of exposures with morbidity symptoms of polymerization workers
35-0035	VINYL CHLORIDE, B.F. Goodrich anticipates industry capacity to grow by 40% by 1980
40-0026	VINYL CHLORIDE, B.F. Goodrich research program has resulted in low levels of VCM in operations
46-0044	VINYL CHLORIDE, bibliography on toxicity of
35-0018	VINYL CHLORIDE, by-product streams from VC plants can be used as feedstock in PPG Industries oxychlorination/oxyhydrochlorination process for manufacture of perchloroethylene-trichloroethylene
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27-0032	EISENBRAND, G.
42-0007	ELDEFRAWI, M.E.
51-0012	ELDER, G.H.
28-0029	ELDREDGE, J.D.
40-0015	ELKORT, R.J.
27-0012	ELLZEY, V.W.
36-0001	EMBER, Lois
39-0002	EMERSON, John A.
40-0032	EMMELOT, P.
46-0047	EMMINGER, Eberhard
41-0007	ENDRES, J.
30-0026	ENGDAHL, R.
32-0001	ENGLANDE, A.J., Jr.
31-0027	ENG-LIANG, Cheu
41-0004	ENTERLINE, Philip E.
49-0015	ENVIRONMENTAL PROTECTION AGENCY OFFICE OF TOXIC SUBSTANCES
46-0042	EPA, OFFICE AIR QUALITY PLANNING & STANDARDS
36-0027	EPA WASHINGTON, D.C.
49-0019	EPLER, J.L.
37-0006	EPSTEIN, S.S.
37-0008	
49-0036	
46-0037	ESCH, Victor H.
48-0028	EVANS, D.M.D.
37-0007	EVANS, J.C.
36-0010	EVANS, Joseph E.
51-0012	EVANS, J.O.
45-0007	EVANS, M.A.
32-0027	EXON, J.H.
42-0024	FAEGER, Rudolph F.
29-0010	FAIRCHILD, M.D.
49-0017	
37-0030	FALK, H.
45-0027	
45-0029	
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32-0028	FALK, H.L.
48-0037	FARBER, John L.
48-0004	FASCHING, James L.
52-0039	FAZIO, T.
44-0033	FEATHERS, R.E.
30-0007	FEHRINGER, Norbert V.
40-0009	FEHSENFELD, F.C.
38-0043	FEINBERG, J.I.
35-0011	FERBER, G.J.
39-0006	FERBER, Kelvin H.
40-0009	FERGUSON, E.E.
43-0025	FERNANDEZ, J.
38-0028	FERON, V.J.
28-0015	FEY, Willard R.
50-0013	FIALA, Emerich S.
48-0019	FICKE, Hunter H.
38-0043	FIDDLER, W.
46-0039	FILATOVA, V.S.
38-0002	FILE, D.M.
44-0036	FINCHER, Robert C.
33-0033	FINE, David H.
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39-0029	FISHER, C.R.
38-0046	FISHER, Nicholas S.
52-0026	FLAKE, R.H.
47-0003	FLIGIEL, Zuzana
46-0022	FOLEY, H.M.
49-0032	FONG, Y.Y.
27-0017	FORBES, P.D.
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30-0042	FORD, Dennis
48-0003	FOREHAND, T.J.
44-0038	FORNI, Alessandra
27-0012	FOSTER, J.F.
40-0004	FOWLER, Bruce A.
47-0007	FOX, A.J.
37-0043	FOX, Helen W.
51-0014	FOX, R.R.
44-0018	FRANKEL, L.S.
35-0039	FRANTZ, C.N.
45-0013	FREY, J.J.
41-0016	FRIDOVICH, Irwin
39-0011	FRIEDMAN, Alan R.
49-0031	FRIEDMAN, M.A.
44-0011	FRIES, G.F.
27-0036	FRIFFING, M.E.
36-0024	FRISCH, K.C.
44-0009	FRITH, Charles H.
43-0036	FRITZ, Steven
52-0026	FRUH, E.G.
37-0006	FU, M.M.
51-0015	FU, Y.C.
48-0020	FUMICH, George, Jr.
43-0004	FURR, A. Keith
33-0008	GADIAN, Theodore
32-0020	GAMBLE, John
38-0042	GANGOLLI, S.D.
27-0016	GANZ, Charles R.
37-0025	
32-0011	GARMAISE, Annie B-K
39-0004	GARN, P.D.
46-0030	GARRITY, John J.
40-0035	GARRO, Anthony J.
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48-0029	GAUVAIN, Suzette
38-0037	GAY, Bruce W., Jr.
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41-0009	GECHEFF, K.
32-0004	GEHRING, Perry J.
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30-0005	GEHRKE, Charles W.
52-0017	GEIKE, F.
29-0011	GEORGE, Marilyn E.
27-0021	GERRISH, Sarah Lee
46-0038	GERVASI, G.
43-0019	GETZ, L.L.
33-0022	GIAM, C.S.
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45-0004	GIBBS, G.W.
28-0029	GILLESPIE, D.M.
39-0001	GILLS, T.E.
27-0031	GIOVACCHINI, R.
31-0020	GOERZ, Gunther
39-0027	GOING, John
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48-0015	GOLBERG, L.
37-0021	GOLDBERG, Leon
40-0009	GOLDMAN, P.D.
35-0014	GOLDSCHMIDT, Bernard M.
43-0020	GOLDSMITH, John R.
40-0028	GOLUB, N.I.
41-0028	GOMEZ, Reinaldo F.
49-0017	GOODMAN, S.J.
44-0036	GORDON, John A.
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46-0014	GRAEDEL, T.E.
28-0013	GRAFF, Robert A.
38-0041	GRANDJEAN, Carter
33-0013	GRANT, D.L.
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27-0038	GREEN, D.
31-0007	GREEN, G.H.
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52-0008	GREENBERG, S.D.
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48-0017	GREENHOUSE, G.
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37-0013	GRIMSRUD, E.P.
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27-0007	GROEHLER, Ken
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30-0008 38-0008	GUTENMANN, Walter H.
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41-0032	HAAS, H.
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42-0016	HAEBIG, Jon E.
34-0004	HAGUE, R.
44-0003	HAHON, Nicholas
46-0054	HAKE, Carl L.
30-0002 32-0026	HALEY, Thomas J.
27-0012	HALL, E.H.
41-0029	HALLSTROM, I.
51-0011	HALSEY, M.J.
38-0022	HAMMARGREN, T.F.
43-0039	HAMMOND, Allen L.
30-0023	HAMMOND, Ogden
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34-0004	HANSEN, David
52-0005	HANSEN, L.D.
37-0016 38-0037	HANST, Philip L.
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35-0036	HASEBE, Kiyoshi
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31-0038	HILL, R.N.
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50-0014	HIRSCH, B.F.
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32-0035	HOEL, David G.
38-0027	HOFFMANN, Dietrich
46-0051	HOLCOMB, William F.
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47-0021	HOLMES, W.F.
51-0013	HOLMQUIST, D.G.
31-0006	HOLT, Buford R.
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27-0002	HOWARTH, Cynthia
32-0036	HOWELL, Margaret A.
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35-0031	HUBERMAN, Eliezer
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33-0033	HUFFMAN, Fred
38-0016	HUGHES, Evan E.
27-0038	HUMPHREYS, E.R.
41-0014	HUNTER, Byron A.
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41-0008 41-0010 50-0011	HUTZINGER, O.
35-0029 43-0029 47-0045 49-0009	IAMMARTINO, Nicholas R.
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35-0003	IIJIMA, S.
51-0015	ILLIG, E.G.
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50-0012	ISSENBERG, Phillip
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44-0037	IZZAT, Ara
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44-0004	JACOBY, F.
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43-0034	JAGANNATH, R. Iyengar
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38-0021	JAQUES, L.B.
39-0020	JELLINEK, H.H.G.
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47-0019	JOHNSON, William S.
47-0018	JONES, D.
52-0035	JONES, J.
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45-0002	JONES, J.S.P.
46-0048	JONES, Robert N.
45-0034	JORDAN, J.W.
42-0027	KAKIZOE, Tadao
30-0025	KALFADELIS, C.D.
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47-0003	KANEKO, Mamoru
47-0005	KANTZ, Marcus E.
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35-0003	KATSUNUMA, H.
37-0020 44-0017	KATZ, Jordan
48-0019	KATZER, James R.
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42-0027	KAWACHI, Takashi
28-0006	KAY, A.N.
34-0004	KAZAZIS, John
49-0037	KEELER, P.A.

45-0039 KEEN, R.C.
48-0013 KELTON, Stanton C.
45-0012 KENNEDY, G.L.
38-0035 KENNEDY, James R.
45-0012 KEPLINGER, M.L.
39-0019 KEVY, Sherwin V.
32-0007 KHUDOLEY, V.V.
27-0012 KIANG, K.D.
37-0001 KIEFER, David M.
49-0010 KILBEY, Brian J.
47-0023 KIM, S.W.
50-0014 KIMBALL, R.F.
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32-0002 KING, H.G.
38-0049 KING, J.M.
51-0009 KING, L.J.
38-0049 KINKEAD, E.R.
40-0036 KIRKLAND, D.J.
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32-0035 KIRSCHSTEIN, Ruth L.
28-0014 KLASS, Donald L.
33-0006 KLEMMER, H.W.
43-0009 KLIGMAN, Albert M.
52-0039 KLINE, D.A.
52-0016 KLINGEBIEL, U.I.
30-0003 KLOSTERKOTTER, Werner
41-0032 KMOCH, N.
47-0028
39-0002 KNOBL, George M., Jr.
41-0006 KOGAN, F.M.
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47-0018 KOHLI, J.
39-0033 KOHN, Philip M.
40-0028 KOLESNICHENKO, T.S.
32-0027 KOLLER, L.D.
44-0031 KOLLIG, Heinz P.
46-0026 KORANSKY, W.
37-0036 KOROPATNICK, D.J.
47-0039 KOS, D.W.
39-0011 KOSHY, K. Thomas
42-0012 KOSS, G.
46-0026
41-0034 KRAFFT, S.
41-0028 KRAFT, Patricia L.
47-0029
39-0021 KRAMKOWSKI, R.S.
36-0023 KRAWIEC, Robert G.
48-0039 KREFFT, Gerda B.
45-0013 KREY, P.W.
40-0020 KRISHEN, Anoop
42-0019 KRISHMAN, Sundaram
36-0007 KROPP, Kenneth L.
50-0008 KROSOVSKII, G.N.
52-0037 KROST, K.
50-0013 KULAKIS, C.
31-0012 KUYATT, C.E.
30-0047 KWOK, Linda W.
30-0031 LACAZE, Jean-Claude
30-0037 LAFLEUR, J.C.
45-0013 LAGOMARSINO, R.J.
37-0036 LAISHES, B.A.
38-0042 LAKE, B.G.
42-0008 LAMB, Brian K.
35-0004 LAMBERT, Joseph P.
52-0004 LAMBERTON, J.G.
44-0028 LANDAU, Emanuel
27-0005 LANGER, A.M.
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32-0029 LANGNER, Ralph R.
27-0031 LANMAN, B.
37-0011 LANOE, J.
51-0011 LANSDOWN, A.B.G.
39-0025 LAO, R.C.
43-0019 LARIMORE, R.W.
30-0030 LARSEN, J.R.
38-0004 LARSEN, Lee B.
27-0020 LASETER, John L.
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30-0022 LaSHELLE, John R.
48-0015 LASKA, Anthony L.
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36-0017 LASSITER, Ray R.
37-0006 LAVAPPA, K.S
44-0025 LAWRENCE, John
46-0032 LAWRENCE, W.H.
41-0031 LAWSON, T.A.
27-0035 LEAL, Joseph R.
31-0010 LeBLANC, R. Bruce
43-0013 LEBOWITZ, Michael D.
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49-0041 LEDERBERG, Joshua
47-0023 LEE, E.S.
50-0007 LEE, I.P.
30-0006 LEE, Ki P.
36-0020 LEE, K.W.
38-0051 LEE, Richard F.
37-0020 LEE, Young K.
48-0031 LEFEMINE, G.
30-0011 LEHMANN, Edward J.
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33-0006 LEITIS, E.
52-0015 LEMEN, R.A.
40-0034 LEMKE, Armond E.
31-0015 LEMMER, Francis S.
45-0025 LEONG, B.K.J.
46-0038 LEPORINI, C.
38-0018 LEVIN, Simon A.
49-0003 LEVINSKAS, G.I.
38-0036 LEWIS, P.J.
28-0016 LEWIS, T.R.
52-0038 LIBBEY, L.M.
37-0025 LIEBERT, Charles
33-0032 LIENER, Irvin E.
27-0014 LIJINSKY, William
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34-0004 LILLIAN, Daniel
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44-0011 LILLIE, R.J.
37-0039 LILLY, Lorna J.
28-0022 LINDLER, Bert
47-0008 LINZON, Samuel N.
36-0008 LIPPMANN,
38-0008 LISK, D.J.
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31-0020 LISSNER, Reinhard
36-0020 LIU, Benjamin Y.H.
31-0038 LIU, Dai Kee
39-0030 LIWERANT, Irene Joab
38-0042 LLOYD, A.G.
36-0033 LLOYD, William J.
34-0004 LOBBAN, L.
47-0004 LODGE, J.P.
37-0032 LOMBARDO, Pasquale
28-0024 LONG, Janice R.
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39-0027 LONG, Sue
46-0038 LOPRIENO, N.
52-0007 LORIMER, W.V.
45-0022 LOUTIT, M.
45-0016 LOVELOCK, J.E.
35-0043 LOW, Hans
30-0029 LU, Po-Yung
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44-0022 LUCAS, James B.
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40-0011 LUEB, R.
46-0033 LYMAN, Donald J.
27-0016 LYMAN, Frank L.
30-0037 LYNCH, R.P.
30-0042 LYNCH, Robert S.
49-0020 M & T CHEMICALS, INC.
52-0008 MABRY, L.C.
38-0033 MacBRIDE, Roland R.
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27-0016 MACEK, Kenneth
30-0036 MACK, W.A.
46-0050 MADDOCK, B.G.
48-0009 MADDOCK, Jerome T.
30-0027 MAGEE, E.M.
30-0025 MAGEE, E.W.
37-0039 MAGEE, P.N.
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39-0001 MAIENTHAL, E.J.
48-0025 MAKI, A.W.
35-0032 MALAVEILLE, C.
52-0021 MALICK, L.
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52-0005	MANGELSEN, N.F.
39-0034	MANMOHAN, D.O.
44-0028	MANOS, Nicholas E.
30-0039	MANTELL, G.J.
42-0012	MANZ, D.
31-0014	MARCHIO, J.L.
30-0047	MARMOT, Michael G.
29-0024	MARTELL, James M.
35-0046	MARTIN, J.H.
48-0023	MARTIN, J.M.
49-0028	MARTINO, Robert
32-0001	MASON, J.W.
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51-0012	MATLIN, S.A.
35-0003	MATSUMOTO, N.
35-0024	MATSUYAMA, Mutsushi
46-0020	MAY, T.W.
52-0036	McCAMMON, C.S.
31-0031	McCANN, Joyce
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39-0001	McCLENDON, L.T.
52-0037	McCRAE, J.
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48-0038	McLAREN, Malcolm G.
32-0020	McMICHAEL, Anthony J.
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38-0052	McNUTT, Neil S.
48-0010	MEDEIROS, Edward J.
43-0027	MEDINA, Daniel
27-0033	MELLO, Nancy K.
28-0028	MELTON, R.
47-0019	MELVIN, Walter W.
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39-0004	MENIS, O.
33-0021	MERESZ, Otto
30-0029	METCALF, Robert L.
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34-0003	MEYN, M. Stephen
31-0012	MIELCZAREK, S.R.
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52-0008	MILLER, J.M.
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40-0035	MILVY, Paul
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35-0042	MIRVISH, Sidney S.
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41-0016	MISRA, Hara P.
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35-0044	MITCHELL, T.J.
37-0038	MITSUNO, Takao
28-0016	MOFFITT, A.E.
35-0041	MOHR, Ulrich
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45-0003	MOLNAR, G.
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46-0027	NELSON, S.D.
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32-0010	OISHI, S.
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41-0034	ONKEN, A.
36-0005	ORPHANIDES, Gus G.
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33-0024	OSHA, U.S. DEPARTMENT OF LABOR
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48-0022	PATTERSON, R.C.
37-0010	PAULET, G.
37-0011	
52-0012	PAWAR, S.S.
32-0028	PAYNE, W.W.
38-0020	PEARSON, J. Gareth
52-0037	PELLIZZARI, E.D.
30-0016	PENG, Geoffrey W.
38-0043	PENSABENE, J.W.
36-0023	PENTZ, William J.
52-0026	PENUMALLI, B.R.
28-0016	PERONE, V.B.
51-0010	PERRIN, J.
42-0024	PETERS, John M.
46-0033	PETERSEN, Robert V.
47-0023	
47-0024	
27-0012	PETERSON, D.B.
33-0006	PFENNINGER, K.
29-0006	PHELPS, Mary A.
38-0042	PHILLIPS, J.C.
30-0005	PICKETT, Edward E.
30-0033	PIEKACZ, Hanna
36-0019	PIELOU, E.C.
44-0001	PIERCE, F.D.
44-0010	
48-0024	PILTZ, F.M.
50-0001	PINTO, S.S.
48-0005	PIPER, Allan
45-0023	PITTER, P.
38-0006	PLANT, Albert F.
52-0016	PLIMMER, J.R.
32-0007	PLISS, Gennady B.
52-0003	POHL, D.
33-0026	POINESCU, I.C.
40-0011	POLLOCK, W.
49-0035	POLO, Joel
40-0005	PONTEFRACT, R.D.
33-0019	POPE, Martin
51-0011	POPE, W.D.B.
47-0021	PORCELLA, D.B.
31-0037	PORTER, John A.H.
45-0027	PORTNOY, B.
32-0034	POSNER, Herbert S.
41-0031	POUND, A.W.
39-0002	POWELL, John J.
44-0013	PRECISION VALVE CORP.
39-0023	PRESCOTT, James H.
27-0028	PREUSSMAN, R.
27-0032	
43-0036	PRICKETT, Mary Sue
33-0039	PROCTOR, Nick H.
30-0004	PROKOFEVA, O.G.
29-0016	PURCHASE, I.F.H.
30-0026	PUTNAM, A.
31-0014	QUICK, Q.
31-0006	RADDING, Shirley B.
35-0019	RADWAN, Z.
41-0030	RAHAT, Ana
44-0037	RAHMAN, Mohammed T.
46-0021	RAHN, Kenneth A.
36-0002	RAJHANS, G.S.
29-0004	RALL, David P.
42-0005	RALOFF, Janet
31-0013	RAMANATHAN, V.
38-0005	RAMOS, Henry
40-0006	
39-0034	RANADIVE, V.
35-0006	RAO, K.V.N.
41-0012	RAPPE, Christoffer
48-0035	
37-0013	RASMUSSEN, R.A.
37-0014	
29-0017	RAWLS, Rebecca L.
39-0028	READ, John
46-0023	RECK, Ruth A.
36-0024	REEGEN, S.L.
48-0038	REES, David I.
31-0009	REEVES, W.A.
44-0034	REICH, Peter
44-0036	
33-0020	REICHERT, D.
35-0019	
44-0002	REICHLE, David E.
45-0014	REINHARDT, C.F.
48-0024	REISH, D.J.
33-0030	REYNOLDS, Edward S.
42-0021	
46-0047	REZNIK, Gerd
47-0028	
35-0041	REZNIK-SCHULLER, Hildegard
40-0004	RHYNE, Bonnie C.
28-0020	RICHARDS, R.J.
42-0023	
44-0004	
29-0016	RICHARDSON, C.R.
40-0007	RICHARDSON, Julian C.
46-0025	RICHTER, E.
29-0024	RICKERT, David A.
42-0004	RINDE, Esther
44-0030	RISBY, T.H.
43-0016	ROBBINS, A.
36-0007	ROBECK, Gordon C.
33-0012	ROBERTSON, D.F.
28-0003	ROBERTSON, Larry W.
30-0003	ROBOCK, Klaus
32-0011	RODGERS, Adrianne E.
41-0040	ROFFMAN, Amiram
49-0040	ROFFMAN, Haia K.
35-0040	ROGERS, Adrienne E.
27-0005	ROHL, A.N.
52-0007	
43-0019	ROLFE, Gary L.
46-0033	ROLL, David B.
44-0007	ROM, W.
37-0010	RONCIN, G.
41-0030	RONEN, A.
28-0020	ROSE, F.A.
42-0023	
45-0033	ROSE, V.E.
34-0014	ROSENKRANZ, Herbert S.
46-0038	ROSSI, Anna M.
34-0003	ROSSMAN, Toby
33-0033	ROUNBEHLER, David P.
49-0036	
52-0037	
37-0015	ROWLAND, F.S.
40-0012	
47-0030	ROWLAND, J.
41-0013	ROZMAN, K.
49-0019	RUBIN, I.B.
37-0009	RUBINO, Robert A.
47-0006	
46-0022	RUDERMAN, M.A.
40-0010	RUNDEL, R.D.
39-0015	RUSSELL, Clifford S.
41-0033	RYTTMAN, H.
52-0036	SAALWAECHTER, A.T.
52-0015	SACCOMANNO, G.
30-0047	SACKS, Susan T.
48-0019	SADANA, Ajit
41-0008	SAFE, S.
41-0010	
47-0018	
32-0035	SAFFIOTTI, Umberto
42-0007	ST. JOHN, L.E., Jr.
44-0037	SALAHUDDIN, A.F.M.
45-0003	SALMIVALLI, M.
27-0002	SAMUELS, Steven
38-0019	SANBORN, James R.
40-0017	
32-0023	SANDALLS, F.J.
49-0031	SANDERS, Virginia
46-0013	SANDORFY, C.
51-0008	SanGIOVANNI, M.L.
32-0011	SARAVIS, Calvin A.
52-0037	SAWICKI, E.
45-0034	SAYAD, R.S.
27-0031	SCALA, R.
52-0038	SCANLAN, R.A.
37-0032	SCHAFFNER, Robert M.
42-0026	SCHAIRER, L.A.
51-0014	SCHER, S.
40-0032	SCHERER, E.
40-0009	SCHIFF, H.I.
48-0030	SCHLATTER, Ch.
40-0009	SCHMELTEKOPF, A.L.
46-0025	SCHMID, A.

40-0033	SCHMID, E.
38-0016	SCHMIDT, Richard A.
38-0036	SCHNEIDER, F.H.
33-0026	SCHNEIDER, I.A.
32-0035	SCHNEIDERMAN, Marvin A.
43-0040	SCHROEDER, Henry A.
27-0016	SCHULZE, Jenoe
37-0025	
30-0020	SCHWARTZ, Herbert
35-0007	SCHWEIKERT, Emile A.
45-0025	SCHWETZ, B.A.
43-0012	SCORER, R.S.
34-0004	SCOTT, Barry
29-0001	SEABRIGHT, Marina
43-0034	SEAMAN, Stephen
51-0025	
27-0038	SEARLE, A.G.
36-0007	SEEGER, Dennis R.
41-0029	SEGERBACK, D.
35-0014	SEIDMAN, Irving
27-0005	SELIKOFF, I.J.
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52-0009	
47-0030	SELLAKUMAR, A.
41-0039	SELTZER, Richard J.
43-0034	SEN, Nrisinha
51-0025	
44-0030	SERRAVALLO, F.A.
30-0040	SEVERS, L.W.
40-0028	SHABAD, L.M.
52-0027	SHAHANE, A.N.
42-0008	SHAIR, F.H.
42-0029	SHANK, R.C.
32-0016	SHANNON, Earl E.
38-0039	SHAPLEY, Deborah
30-0027	SHAW, H.
28-0022	SHEA, Kevin P.
46-0030	SHELDON, Richard C.
50-0007	SHERINS, R.J.
30-0006	SHERMAN, Henry
33-0013	SHIELDS, J.B.
45-0019	
49-0041	SHIH, Katherine Lu
52-0021	SHIMIZU, H.
43-0007	SHIREY, Steven B.
29-0024	SIEGEL, Frederic R.
30-0042	SIKKA, Harish C.
31-0031	SIMMON, Vincent
48-0021	SIMONE, A.A.
51-0010	SIMPSON, B.R.
29-0006	SIMPSON, Harold N.
29-0001	SINCOCK, Andrew
48-0035	SINGER, G.M.
46-0032	SINGH, A.R.
34-0004	SINGH, H. Bir
47-0039	SINGH, M.M.
45-0002	SKIDMORE, J.W.
30-0040	SKORY, L.K.
45-0034	
36-0007	SLOCUM, Clois J.
29-0005	SLYSH, Roman
36-0007	SMITH, Bradford L.
32-0001	SMITH, P.M.
48-0028	
45-0012	SMITH, S.H.
52-0005	SMITH, T.J.
30-0022	SMITH, Wayne E.
40-0034	SMITH, Wesley E.
30-0026	SMITHSON, G.
39-0029	SNYDER, Sara
44-0005	SOLOMON, A.
41-0021	SOMERS, G. Fred
37-0045	SORENSEN, Alfred
52-0002	SORENSEN, E.M.B.
50-0012	SORNSON, H.C.
42-0026	SPARROW, A.H.
38-0028	SPEEK, A.J.
33-0035	SPENCE, John W.
37-0016	
37-0016	SPILLER, Lester L.
32-0020	SPIRTAS, Robert
44-0006	SPIVEY, Charles, Jr.
42-0013	SPRINGER, D.L.
47-0004	SPURNY, Kvetoslav
27-0034	SPYKER, Joan M.
28-0013	SQUIRES, Arthur M.
49-0023	STAFFORD, John
52-0003	STARR, G.
38-0011	STEDMAN, D.H.
40-0008	
30-0013	STEIN, Lawrence
31-0026	STEIN, N.S.
46-0026	STEINBACH, K.
47-0030	STENBACK, F.
27-0016	STENSBY, Per S.
37-0025	
29-0008	STEPHENS, Edgar R.
37-0012	
29-0010	STERMAN, M.B.
49-0017	
36-0007	STEVENS, Alan A.
45-0034	STEVENSON, M.P.
46-0054	STEWART, Richard D.
37-0036	STICH, H.F.
47-0004	STOBER, Werner
30-0008	STOEWSAND, Gilbert S.
43-0004	
40-0010	STOLARSKI, P.S.
35-0015	STONARD, M.D.
52-0003	STONER, J.
31-0031	STREITWIESER, David
49-0025	STRELOW, Roger
46-0038	STRETTI, G.
52-0035	STRINGER, W.
51-0010	STRUNIN, L.
27-0001	STUDEBAKER, M.L.
48-0041	STUKEL, James J.
38-0021	SUE, T.K.
42-0027	SUGIMURA, Takashi
37-0038	SUGIYAMA, Taketoshi
38-0049	SULLIVAN, L.J.
41-0008	SUNDSTROM, G.
41-0010	
50-0011	
30-0038	SUTHERLAND, M.E.
43-0035	SUZUKI, Norio
34-0007	SWAFFIELD, Laura
41-0022	SWEET, Diana M.
44-0015	SWIFT, D.L.
46-0033	SWINYARD, Ewart A.
47-0024	
36-0007	SYMONS, James M.
33-0030	SZABO, Sandor
42-0021	
41-0007	SZWABOWSKA, M.
37-0038	TABUCHI, Yoshiki
39-0020	TAKADA, K.
42-0027	TAKAYASU, Hisao
42-0027	TAKEUCHI, Tomio
48-0003	TAL, H.
33-0005	TALMI, Yair
33-0001	TANINAKA, Takumi
33-0002	
47-0029	TANNENBAUM, Steven R.
49-0014	TARDIFF, Robert G.
29-0008	TAYLOR, Clifton O.
46-0050	TAYLOR, D.
45-0017	TAYLOR, G.J.
48-0035	TAYLOR, H.W.
37-0012	TAYLOR, O.C.
52-0036	TEASS, A.W.
29-0013	TEFERTILLER, Nancy B.
44-0024	
35-0011	TELEGADAS, K.
47-0008	TEMPLE, Patrick J.
27-0036	TER HAAR, G.L.
47-0040	TERPOLILLI, Ralph N.
38-0025	THOBURN, Theodore
39-0025	THOMAS, R.S.
28-0029	THOMPSON, C.K.
40-0009	THOMPSON, T.L.
33-0036	THOMSON, A.J.
37-0011	THOS, A.
38-0015	TILLMAN, David A.
45-0003	TOIVANEN, A.
34-0004	TOOMEY, J.
38-0031	TORDELLA, J.P.
44-0025	TOSINE, Nelle M.
42-0014	TOTH, Bela
52-0021	
48-0014	TOU, James C.

37-0010	TOULOUSE, F.
37-0011	
45-0014	TROCHIMOWICZ, H.J.
34-0003	TROLL, Walter
42-0004	
40-0020	TUCKER, Ralph G.
46-0038	TURCHI, G.
46-0032	TURNER, J.E.
40-0029	TYNDALL, R.L.
40-0034	TYO, Robert M.
48-0027	UDNOON, Sopsamorn
42-0020	ULMACHNEIDER, Ronald W.
42-0027	UMEZAWA, Hamao
27-0032	UNGERER, O.
33-0035	UPHAM, J.B.
27-0017	URBACH, F.
27-0018	
27-0019	
33-0020	URBAN, Th.
40-0007	URWIN, Colin
40-0030	VALLE, Ricardo T.
38-0028	VAN BATTUM, D.
48-0025	VANCE, B.D.
39-0011	VANDERSLIK, Allen L.
38-0025	VANDERVORT, Robert
40-0032	VAN DIJK, W.F.M.
35-0014	VAN DUUREN, Benjamin L.
52-0028	
32-0020	VAN ERT, Mark
44-0002	VAN HOOK, Robert I.
50-0008	VARSHAVSKAYA, S.F.
40-0036	VENITT, S.
50-0030	
43-0036	VERNICK, David
44-0021	VERNOT, E.H.
39-0007	VERSAR, Inc.
42-0022	VERVALIN, Charles H.
31-0038	VESELL, Elliot S.
35-0006	VESSELINOVITCH, S.D.
45-0026	VESTERBERG, O.
37-0010	VIDAL, E.
44-0038	VIGLIANI, E.C.
32-0009	VILLENEUVE, D.C.
33-0013	
47-0002	WAGNER, J.C.
52-0003	WAGNER, S.
52-0006	WAGNER, W.
45-0029	WAGONER, J.K.
49-0030	
52-0015	
52-0035	
48-0027	WALKER, Anne E.
41-0011	WALKER, James C.G.
42-0017	WALLACE, Robert T.
39-0012	WALLIS, Ian G.
48-0004	WALSH, Paul R.
51-0010	WALTON, B.
48-0027	WARD, A. Milford
30-0006	WARITZ, Richard S.
52-0038	WARTHESEN, J.J.
38-0029	WATANABE, P.G.
49-0024	
48-0027	WATKINS, J.
44-0002	WATSON, Annetta P.
37-0016	WATTS, Donald M.
45-0029	WAXWEILER, R.J.
49-0030	
52-0035	
48-0023	WAYLAND, J.R.
47-0020	WEBER, K.
44-0005	WEBSTER, I.
38-0040	WEEKES, U.Y.
38-0012	WEEKS, Robert W., Jr.
31-0007	WEETH, R.J.
42-0024	WEGMAN, David H.
41-0005	WEHNER, Alfred P.
46-0046	
48-0006	
46-0048	WEILL, Hans
50-0013	WEISBURGER, J.H.
44-0019	WEISS, William
44-0020	
50-0010	
51-0014	WESBROTH, S.H.
52-0003	WESWIG, P.
45-0024	WETTSTROM, R.
49-0003	WHARTON, F.D., Jr.
45-0015	WHEATER, R.H.
30-0038	WHEELER, R.N., Jr.
47-0007	WHITE, G.C.
31-0001	WILKINSON, a.K.
31-0002	
38-0028	WILLEMS, I.
38-0043	WILLIAMS, A.C.
48-0028	WILLIAMS, D.H.J.
30-0034	WILLIAMS, David T.
30-0029	WILLIAMS, John W.
35-0004	WILSHIRE, Frank W.
35-0045	WILSON, Hugh H.
44-0033	WIMER, W.E.
40-0019	WITHEY, Jim R.
39-0017	WITZEL, Donald A.
34-0014	WLODKOWSKI, Theodore J.
27-0031	WOLCOTT, G.
44-0031	WOLFE, N. Lee
44-0036	
43-0007	WOLFF, Mary
51-0007	WOLFRUM, J.
52-0036	WOODFIN, W.J.
47-0024	WOODHEAD, J.H.
49-0031	WOODS. Shirley
48-0024	WORD, J.Q.
30-0037	WORK, G.A.
35-0016	WYROBEK, A.J.
35-0024	YAMADA, Seiji
38-0007	YAMASAKI, Edith
37-0021	YANG, Raymond S.H.
48-0015	
38-0012	YASUDA, Stanley K.
35-0023	YASUDA, Y.
52-0020	YIP, G.
48-0039	YOON, Soo-Choon
31-0027	YOSHITAKA, Ogiwara
30-0030	YU, Ching-Chieh
40-0017	
52-0019	YURAWECZ, M.P.
37-0012	ZAFONTE, L.
50-0016	ZAHRADNIK, Raymond L.
32-0011	ZAMCHECK, Norman
32-0033	ZAPP, J.A., Jr.
36-0032	
44-0031	ZEPP, Richard G.
44-0036	
41-0033	ZETTERBERG, G.
30-0023	ZIMMERMAN, Martin B.
48-0036	ZINGMARK, P-A
46-0048	ZISKIND, Morton
39-0002	ZOOK, Elizabeth G.
44-0015	ZUSKIN, E.

CATS Biweekly Reports

Nos. 27 - 39

Beatty, J.R. and Studebaker, M.L.
THE RUBBER COMPOUND AND ITS COMPOSITION
PART I: POLYMER, CURING SYSTEM, CARBON BLACK
Rubber Age 107 (8): 20-35 (1975)

This review describes price, processing, and properties as the major compounding factors; outlines 14 common processing problems; and discusses the functions of the various rubber compounding ingredients: elastomers, cure systems, fillers, processing aids, and other ingredients. Among the topics discussed are the selection of the polymer, the most important ingredient of a rubber compound; stress-strain values; abrasion resistance; permanent set; polymer blends; cure system; scorch control; fast cure systems; ease of dispersion; carbon blacks; and existing problems.

In the selection of a curing system, care must be taken to avoid those chemicals which are toxic and may cause dermatitis.

Some NBR rubbers with very good oil resistance have a high acrylonitrile content. Halogenated compounds, used as additives to reduce the flammability of polymers, seem to be most effective when used in conjunction with antimony oxide.

Samuels, Steven and Howarth, Cynthia
RESPIRATORY CANCER AND OCCUPATIONAL EXPOSURE TO ARSENICALS (Letter to Editor)
Arch. Environ. Health 30 (8): 423 (1975)

Refuting the statement of Ott et al (See: CATS 7-0022) that a dose-response relation exists between an index of arsenic exposure and the ratio of observed-to-expected respiratory cancer deaths among Dow workers, the authors question the estimates of expected deaths; claim bias for the samples of exposed and control study groups; and raise the possibility that trivalent arsenic as well as pentavalent arsenic may have been present in the work environment, a factor that would hinder proper evaluation of the pentavalent form.

27-0003
ASBESTOS

Dohner, V. Alton et al
ASBESTOS EXPOSURE AND MULTIPLE PRIMARY TUMORS
Am. Rev. Respir. Dis. 112 (2): 181-99 (August 1975)

Reviewing the case reports of 5 individuals with multiple primary tumors, the authors point out that most attending physicians did not know that these patients had been exposed to asbestos in their work and that the physicians were unaware of the potential health hazards associated with asbestos.

The authors then review other reported instances of asbestos-related carcinomas. They also tabulate the various uses of asbestos, listing a variety of industrial and domestic articles in which asbestos is used for heat insulation, electrical purposes, friction materials, and such miscellaneous uses as sheets, curtains, rugs, airplane wings, life jackets, etc. Occupational exposures include: asbestos rock mining, asbestos carding, asbestos cork insulation workers, pipe coverers, etc. Nonoccupational exposure includes residents near asbestos mills or near roads on which asbestos is trucked, those living in houses with asbestos insulation, etc.

27-0004
ASBESTOS

Anon
BENDIX CORP. ORDERED TO HALT ASBESTOS EMISSIONS:
Environ. Health Lett. 14 (16): 5 (15 August 1975)

Because visible emissions of asbestos to the outside air were observed during a July 14 inspection of Bendix Corporation's Friction Materials Division, Green Island, N.Y., the company has been ordered by EPA to correct violations. No asbestos emissions are permitted under the national emissions standards for this chemical. Unless Bendix installs corrective air cleaning devices, it must stop its mixer dumping operations.

27-0005
ASBESTOS

Rohl, A.N. et al
EXPOSURE TO ASBESTOS IN THE USE OF CONSUMER SPACKLING, PATCHING, AND TAPING COMPOUNDS
Science 189 (4502): 551-3 (15 August 1975)

Spackling, patching and jointing compounds used for home repair work often contain asbestos fibers, according to researchers at the Environmental Science Lab., Mount Sinai School of Medicine, NYC. Although asbestos has been implicated as a carcinogen and OSHA has established safety levels for industrial exposure, there are no standards for the home workshop. Tests indicate concentrations of asbestos in the home workshop higher than in factories. Warning labels for the adhesives are needed and it has been suggested that the use of potentially toxic or hazardous minerals in these products should be eliminated.

27-0006
ASBESTOS

Anon
EMISSION CONTROL AND ITS COST FOR THE TACONITE. . .
J. Air Pollut. Control Assoc. 25 (8): 796 (1975)

EPA has commissioned an IGCI task group to determine the cost of emission control for the taconite ore processing industry. The group has already surveyed operations at Reserve Mining Company's ore mine at Babbitt, Minn., and at its concentrator plant at Silver Bay, Minn. (Asbestos in taconite tailings from Reserve Mining's operations has been the topic of water pollution/health hazard discussions recently).

27-0007
BENZIDINE

Zimmerman, Stephen W. et al
HYDROCARBON EXPOSURE AND CHRONIC GLOMERULONEPHRITIS
Lancet 2 (7927): 199-201 (2 August 1975)

Interviews of 63 adult patients with advanced renal failure showed that those with glomerulonephritis had been exposed more than others chronically to contact or inhaled toxicants, particularly hydrocarbon solvents.

Several earlier reports have associated rapidly progressive glomerulonephritis with hydrocarbon solvent exposure, and one study indicated its induction in rats fed N,N'-diacetylbenzidine.

Anon
MORE NEW FR THERMOPLASTICS FOR MOLDING AND EXTRUSION
Mod. Plast. 52 (8): 20 (1975)

Diamond Shamrock Chemical Co. now offers Polytuf 200, a terpolymer of vinyl chloride, ethylene, and vinyl acetate as a flame retardant for molding and extrusion applications.

27-0009
FLUOROCARBONS

Charlesworth, F.A.
FLUOROCARBON PROPELLANTS IN PLAY AGAIN
Food Cosmet. Toxicol. 13 (3): 393-6 (June 1975)

Following up an earlier review of the literature on fluorocarbons, which indicated that these materials were relatively safe, the author now reviews five papers that throw some doubt on earlier reports.

In several, the development of cardiac arrhythmia in mice indicates that patients with bronchopulmonary disease run the risk of death by cardiac arrest from exposure to some fluorocarbons. Further studies with monkeys and dogs show similar findings including the fact that the fluorocarbons depress ventricular function in the canine heart. With humans, there is the possibility that excessive use of drug aerosols may induce cardiac arrhythmia and death.

27-0010
FLUOROCARBONS

Anderson, Earl V.
CARBON TET PRODUCERS FRET OVER THREAT TO FLUOROCARBONS
Chem. Eng. News 53 (33): 8-9 (18 August 1975)

Another effect of the potential ban on chlorofluorocarbons is related to the production of carbon tetrachloride. In 1974, an estimated 92% of the 1.13 billion lb. of carbon tet produced went into F-11 (trichlorofluoromethane) and F-12 (dichlorofluoromethane). Because more than 50% of these chlorofluoromethanes are used in aerosols, the carbon tet producers could lose at least 50% of their major market.

Some producers, who also have "swing" plants (those producing carbon tet as a coproduct with perchloroethylene) may convert much of their capacity to perchloroethylene. In 1975, carbon tet production may drop to under 900 million lb.

27-0011
ISOCYANATES

Anon
MOBAY BOOSTS TDI TABS
Chem. Wk. 117 (8): 23 (20 August 1975)

Possibly starting a trend, Mobay Chemical will raise its bulk price of toluene diisocyanate (TDI) to 40¢/lb in mid-September. Recently, TDI prices have been discounted to 35.7¢/lb. from the 45¢ list price set in August 1974.

ISOCYANATES

See also: 27-0021, Polyurethanes

Hall, E.H. et al
FUELS TECHNOLOGY: A STATE-OF-THE-ART REVIEW
Battelle Columbus Labs., Ohio. EPA/650/2-75-034. PB-242 535/3WK. (April 1975)

The report gives results of a state-of-the-art review of various fuel-cleaning, fuel-conversion, and emission control technologies. It includes the following classes of technologies: physical and chemical coal cleaning, residual oil desulfurization, coal refining (liquefaction), coal and oil gasification, fluidized-bed combustion of coal, and stack gas cleaning. For each technology, the report presents the extent of current practice and the status of systems under development.

[Abstract in: NTIS Weekly Govt. Abstracts, Chemistry, p. 313 (Aug. 18, 1975)]

Anon
MORE MOCA RULES PROTESTED
Mod. Plast. 52 (8): 79-80 (1975)

The Polyurethane Manufacturers Assn. (PMA) is protesting OSHA's request for posting toxic chemical warning signs in areas where MOCA is used. PMA is also challenging the OSHA standards for MOCA that call for air-supplied hoods, showers, regulated areas for storage of sealed containers, and absolute filters.

27-0014
NITRILOTRIACETIC ACID

Greenblatt, M. and Lijinsky, W.
CARCINOGENESIS AND CHRONIC TOXICITY OF NITRILOTRIACETIC ACID IN SWISS MICE
J. Nat. Cancer Inst. 52: 1123 (1974)

Nitrilotriacetic acid (NTA), a chelating agent suggested as a partial replacement for sodium triphosphate in detergents, was previously tested as a carcinogen in rats but the results were inconclusive.

A later study with mice, given NTA and sodium nitrate in drinking water, indicates that NTA did not induce lung tumors in the 40 male mice tested but that 12% of the 40 female mice tested developed lung tumors. Incidence of lung tumors in controls was 19% in males and 12% in females.

A combination of sodium nitrite and NTA in the drinking water gave a tumor incidence of 33% in males and 16% in females, a significant overall increase.

[Review in: Food Cosmet. Toxicol. 13 (3): 409-10 (June 1975)]

27-0015
NITRILOTRIACETIC ACID

Anon
NITRILOTRIACETIC ACID HAS BEEN CONFIRMED AS A CARCINOGEN. . .
Chem. Eng. News 53 (33): 7 (18 August 1975)

Long-term studies at the National Cancer Institute and the National Institute of Environmental Health Sciences confirm the carcinogenicity potential of NTA, which caused urinary tract cancers in rats and mice.

NTA has again been suggested as a phosphate substitute for detergents; four years ago such use was stopped, when NTA was judged a potential teratogen.

27-0016
OPTICAL BRIGHTENERS

Ganz, Charles R. et al
ACCUMULATION AND ELIMINATION STUDIES OF FOUR DETERGENT FLUORESCENT WHITENING AGENTS IN BLUEGILL (*LEPOMIS MACROCHIRUS)*
Environ. Sci. Technol. 9 (8): 738-44 (1975)

Studies in which bluegills were exposed to four sulfonated stilbene fluorescent whitening agents (FWA's) indicate little tendency for the FWA's to accumulate in the fish tissue, which might later be consumed by man. Table shows acute toxicity of the four FWA's in bluegill, in rainbow trout, and in Channel catfish.

27-0017
OPTICAL BRIGHTENERS

Forbes, P.D. and Urbach, F.
EXPERIMENTAL MODIFICATION OF PHOTOCARCINOGENESIS.
I. FLUORESCENT WHITENING AGENTS AND SHORT-WAVE UVR
Food Cosmet. Toxicol. 13 (3): 335-37 (June 1975)

The increasing use of fluorescent whitening agents (FWAs) in numerous domestic products warrants studies of their potential environmental hazard. To determine if FWAs were photobiologically active or cocarcinogenic, hairless mutant (HRS/J) mice were exposed to germicidal, low-pressure mercury-vapor ultraviolet lamps, with and without pretreatment of the skin with the FWA, disodium 4,4'-bis-(4,6-dianilino-1,3,5-triazin-2-yl)-aminostilbene-2,2'- disulfonate, applied in 20 µg methanol. Mice were irradiated daily for several months. Those pretreated only with methanol before UV radiation developed erythema and skin cancers. Under the same conditions, mice pretreated with the FWA had a slightly longer latent period and developed fewer tumors. The FWA was considered to be non-phototoxic and non-cocarcinogenic.

27-0018
OPTICAL BRIGHTENERS

Forbes, P.D. and Urbach, F.
EXPERIMENTAL MODIFICATION OF PHOTOCARCINOGENESIS.
II. FLUORESCENT WHITENING AGENTS AND SIMULATED SOLAR UVR
Food Cosmet. Toxicol. 13 (3): 339-42 (June 1975)

Hairless mice, exposed daily for several months to UV radiation from a solar simulator, developed skin tumors (mostly squamous-cell carcinomas). Mice, whose skin was pretreated with the phototoxic agent 8-methoxypsoralen (0.01% in methanol), developed more tumors in a shorter exposure time. Mice pretreated with either sodium 2-(4-styryl-3-sulfophenyl)-2H-naphtho[1,2-d]-triazole or disodium 4,4'-bis-([4-anilino-6-(N-methyl-2-hydroxyethylamino)-1,3,5-triazin-2-yl]-amino) stilbene-2,2'-disulfonate, applied in methanol, showed no more severe response than those exposed only to UV irradiation. Thus, the two substituted-stilbene fluorescent whitening agents were judged not to be phototoxic or to enhance photocarcinogenesis.

27-0019
OPTICAL BRIGHTENERS

Forbes, P.D. and Urbach, F.
EXPERIMENTAL MODIFICATION OF PHOTOCARCINOGENESIS.
III. SIMULATION OF EXPOSURE TO SUNLIGHT AND FLUORESCENT WHITENING AGENTS
Food Cosmet. Toxicol. 13 (3): 343-5 (June 1975)

Hairless mice developed skin tumors, when exposed daily over a period of several months to UV, visible and infra-red radiation from a long-arc xenon-lamp simulating sunlight. Pretreatment of the skin with 8-methoxypsoralen (8-MOP) induced more tumors sooner, showing the 8-MOP to be a definite enhancer of photocarcinogenesis. Mice, whose skin was pretreated with any of four substituted-stilbene fluorescent whitening agents (FWAs), had fewer and less prevalent tumors than did the controls, indicating that the FWAs were not phototoxic and not cocarcinogenic.

Dowty, Betty J. et al
NEW ORLEANS DRINKING WATER SOURCES TESTED BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY
Environ. Sci. Technol. 9 (8): 762-5 (1975)

A gas chromatograph-mass spectrometer-computer combination identified major aromatic and halogenated aliphatic compounds in New Orleans drinking water, in a commercial source of artesian water, and in deionized charcoal-filtered finished water. Tetrachloroethylene (perchloroethylene) and trichloroethylene were identified in two instances, but were not identified in the artesian water.

PERCHLOROETHYLENE

See: 27-0010, Fluorocarbons

27-0021
POLYURETHANES

Gerrish, Sarah Lee
URETHANE FOAM ON THE RISE
Mod. Packag. 48 (8): 19-22 (1975)

More packaging uses are anticipated for polyurethane (PU) foam, following changes in its chemistry and applications. An increasing market is seen for foam-in-place packaging, which now accounts for about 20% of total PU. Total urethane for packaging may climb to 25 million lb. in 1975 compared to 18 million lb. in 1974.

From the safety standpoint, reduced toxicity is seen because of widespread switch from TDI (toluene-based) to MDI (methylene-based) chemistry. Also, one supplier reputedly has eliminated all Freon from his formulations, but has not identified the substitute.

See: 27-0020, Perchloroethylene

Anon
WILL SHALE YIELD CHEMICALS BEFORE OIL?
Chem. Week 117 (8): 37 (20 August 1975)

Colorado shale is now seen as a potential source of soda ash and sodium bicarbonate. The nahcolite-bearing oil shale could yield sodium bicarbonate at an operating cost of $10/ton and a capital cost of $4/ton, according to one estimator. Another sees a 1-million-ton/year nahcolite mining operation possible at a capital cost of $45 million and foresees a 300,000 to 500,000 tons-a-year market for calcined nahcolite.

It may be that the shale will yield chemicals before it yields oil via the several in situ oil extraction processes now under consideration. One method, advanced by Shell, is a solution method in which superheated water is injected under pressure into the shale to dissolve the nahcolite, yielding a concentrated solution of sodium bicarbonate, as well as crude oil. The system would disturb the landscape only slightly and would require very little water because of recycling.

27-0023
VINYL CHLORIDE

Anon
NATION'S NEWEST PVC PLANT IS A MODEL OF SAFETY, AUTOMATION, PRODUCT UNIFORMITY
Mod. Plast. 52 (8): 14, 16 (1975)

Georgia-Pacific's Plaquemine, La., 100,000 ton-capacity PVC plant, which came on stream in 1975, is in compliance with the 1 ppm time weighted average standards that OSHA plans to make effective next April for VCM.

There are no walls, no roof, and no enclosures to trap vapors in the plant; its nine reactors are cleaned automatically, plant air is continuously monitored and an alarm sounds at any location where VCM level reaches 1 ppm.

Output from the new plant will be sold on the market.

27-0024
VINYL CHLORIDE

Anon
OUTPUT OF MAJOR ORGANICS IN FIRST HALF WAS DOWN FROM YEAR-AGO TOTALS
Chem. Week 117 (8): 13 (20 August 1975)

The 342 million lbs of VCM produced in June 1975 was 22% below June 1974 production, and the 1.67 billion lbs produced in the first six months of 1975 was 40% under production during the first six months of 1974, reflecting the current downtrend for other major organic chemicals. Chemicals showing production drops from 23% to 37% for the month and from 26% to 46% for the first half of the year are butadiene, ethylene, propylene, styrene, acetic acid, and formaldehyde.

27-0025
VINYL CHLORIDE

Anon
DEMAND FOR CHEMICALS WILL REBOUND IN 1976 BUT NOT MATCH 1974 LEVEL
Chem. Week 117 (8): 13 (20 August 1975)

The 6% rebound in demand for nine major chemicals predicted for 1976 will not completely counteract the 7.5% drop in demand expected during 1975, according to Applied Econometrics, Melville, N.Y. A 41% drop in demand is predicted in 1975 for polyethylene, PVC, polystyrene, phthalic anhydride, and formaldehyde (all of which are used in plastics). In 1976, demand for these five materials should rise 30% but still fall about 21% below 1974 demand. Higher prices in 1976 are predicted for all 14 chemicals.

27-0026
VINYL CHLORIDE

Anon
FDA WILL PROPOSE TO BAN SOME USES OF POLYVINYL CHLORIDE IN FOOD PACKAGING. . .
Chem. Eng. News 53 (33): 7 (18 August 1975)

Fearful that vinyl chloride, a human carcinogen, from PVC bottles and wrapping paper, FDA may propose banning the use of PVC for some food packagings instead of merely limiting VC content of the PVC to 50 pbb.

27-0027
VINYL CHLORIDE

Anon
AT LONG LAST A PVC REG, MAYBE
Mod. Packag. 48 (8): 53 (1975)

Maybe, but again maybe not, is the prediction that FDA is about ready to set migration levels for vinyl chloride in food-contact packaging materials. Since early 1973, when FDA first learned of the migration problem, other government agencies, including the Coast Guard, have established VC regulations. FDA postponed its regulations in March 1975, pending study of Dr. Maltoni's findings that ingested VC may cause cancer in rats.

The Society of the Plastics Industry, Inc. (SPI) claims that vinyl monomer is not migrating into foodstuff. SPI recently hired ex-EPA chief, W.D. Ruckelshaus, to help prod EPA into writing air-control standards for production of vinyl chloride.

VINYL CHLORIDE

See: 27-0008, Flame Retardants

27-0028
GENERAL INFORMATION

Ivankovic, S. and Preussman, R.
ABSENCE OF TOXIC AND CARCINOGENIC EFFECTS AFTER ADMINISTRATION OF HIGH DOSES OF CHROMIC OXIDE PIGMENT IN SUBACUTE AND LONG-TERM FEEDING EXPERIMENTS IN RATS
Food Cosmet. Toxicol. 13 (3): 347-51 (June 1975)

To test the toxicity and carcinogenicity of the pigment chromic oxide, BD rats were fed chromium oxide green (used as a cosmetics coloring) for 90 days (to test subacute toxicity) and over a two-year period (to test long-term toxicity and carcinogenicity).

Although autopsy revealed reduced weights of liver and spleen in treated animals, no macroscopic or histological changes were noted. No toxic effects resulted from high oral doses over 90 days or two years and no carcinogenic action resulted.

Although the oral route may be questioned for determining the effects of a cosmetic product, substances that are non-toxic given orally are usually non-toxic when applied to the skin.

27-0029
GENERAL INFORMATION

Anon
CHROMATES CITED AS CANCER LINK BY JAPAN
Chem. Week 117 (8): 14 (20 August 1975)

Sodium dichromate may have caused the deaths from lung cancer of 18 workers in Nippon Chemical Industrial (NCI) and Nippon Denko, according to Japan's Ministry of Labor. The 500,000 tons of waste that NCI dumped into Tokyo's Koto ward between 1939 and 1971 may be the cause of most of the chronic bronchitis and emphysema found in 583 of that area's residents. Chromates are also suspect carcinogens according to preliminary studies in Italy and Norway, and NIOSH in the U.S. may issue an alert on them.

27-0030
GENERAL INFORMATION

Anon
CHECKING ON CHROMATES
Chem. Week 117 (7): 22 (13 August 1975)

Having been informed by the Dry Color Manufacturers Assn. (DCMA) that the results of research in Italy and Norway, albeit inconclusive, suggest that chromates are carcinogenic, NIOSH will very shortly determine if it should issue an alert on these substances, which find extensive use in the pigment industry. Meanwhile, DCMA is sponsoring animal studies and epidemiologic surveys on chromates.

In Italy, 26 of 40 rats injected with "chromate ores" developed tumors. The study, conducted by Cesare Maltoni of the Institute for Cancer Research in Bologna, may not be too relevant, however, because workers inhale chromates. In Norway, five cancers (3 of the lung and one each of the prostate, pancreas, and nasal passage) were discovered among 133 workers in a chromate pigment factory, where the workers were exposed to lead chromate, zinc chromate, and molybdenum chromate.

27-0031
GENERAL INFORMATION

Burnett, C. et al
LONG-TERM TOXICITY STUDIES ON OXIDATION HAIR DYES
Food Cosmet. Toxicol. 13 (3): 353-7 (June 1975)

Random-bred Swiss Webster mice were used to determine the potential skin toxicity of the major ingredients or reaction products in oxidation hair dye formulations. Over an 18-month period, groups of 100 mice received topical applications, weekly or biweekly, of three hair-dye formulations, which were mixed with hydrogen peroxide to provide actual use conditions. Chemical intermediates in these formulations included 2,5-toluenediamine sulfate, m-and ρ-phenylenediamine, resorcinol, 2,4-diaminoanisole sulfate, and 2,4-toluenediamine. The last compound, when given to rats in a sub-optimal diet (0.1% for 35 wks), induced liver cancers. In this study, however, no overt signs of systemic toxicity nor carcinogenic activity were noted from any of the formulations tested.

27-0032
GENERAL INFORMATION

Eisenbrand, G. et al
THE REACTION OF NITRITE WITH PESTICIDES. II. FORMATION, CHEMICAL PROPERTIES AND CARCINOGENIC ACTIVITY OF THE *N*-NITROSO DERIVATIVE OF *N*-METHYL-1-NAPHTHYL CARBAMATE (CARBARYL)
Food Cosmet. Toxicol. 13 (3): 365-7 (June 1975)

Because of the possibility that residues of certain pesticides or insecticides in food could react with nitrite in the stomach to form carcinogenic N-nitroso compounds, the capacity for nitrosation (under simulated stomach conditions) of carbaryl, the insecticide N-methyl-1-naphthyl carbamate, was measured. Additionally, the chemical and physicochemical properties of synthesized N-methyl-N-nitroso-1-naphthyl carbamate were studied and the carcinogenic action of this nitroso derivative were determined. Fourteen of 16 rats given a single sc dose of 1000 mg N-nitrosocarbaryl/mg developed local polymorphic-cell sarcomas at the injection site, but 21 months after receiving single oral doses of 200-15 mg/kg of the compound other test rats showed no evidence of tumors.

27-0033
GENERAL INFORMATION

Mello, Nancy K.
BEHAVIORAL TOXICOLOGY:
A DEVELOPING DISCIPLINE
Fed. Proc., Fed. Am. Soc. Exp. Biol. 34 (9): 1832-4 (August 1975)

Behavioral toxicology, an emerging development, should add new dimensions to the study of the effects of pollutants on man and help in the establishing of maximally acceptable concentrations of environmental and occupational pollutants.

Although there are similarities between behavioral toxicology and behavioral pharmacology, there are major differences. Behavioral toxicological studies are aimed at detecting the effect of a toxic substance that may cumulate slowly over the years and not produce discernible behavioral effects until it reaches a critical concentration. It is urgent that techniques be developed to detect the early consequences of exposure to toxic chemicals.

The long-term effects of asbestos exposure and the effects of poisoning by methylmercury and lead are cited as examples of the need for pre-determining the potential toxicity of chemicals.

27-0034
GENERAL INFORMATION

Spyker, Joan M.
ASSESSING THE IMPACT OF LOW LEVEL CHEMICALS ON DEVELOPMENT: BEHAVIORAL AND LATENT EFFECTS
Fed. Proc., Fed. Am. Soc. Exp. Biol. 34 (9): 1835-44 (August 1975)

Behavioral toxicology and behavioral teratology are developing disciplines that may help define the potential effects on man of the many pollutants that are accumulating in the environment. Apparently, nervous tissue, particularly the brain, is affected by toxic chemicals with the adverse effects appearing as subtle behavioral disturbances quite some time before any toxic symptoms appear. Sensitivity is highest from conception to puberty. The developing brain is also sensitive to teratogens and their effects can also be evidenced in subtle behavioral abnormalities. These theories are illustrated by the results of studies with mice exposed to methylmercury during their prenatal and early postnatal period of development.

27-0035
GENERAL INFORMATION

Leal, Joseph R.
POLYBENZIMIDAZOLES
Mod. Plast. 52 (8): 60-2 (1975)

Polybenzimidazoles are reviewed briefly as a class of polymers that are chemically stable and resistant to high temperatures, the all-aromatic polymers being thermally stable to about 500°C and those with aliphatic chains in the backbone being stable to about 350°C. A more detailed report is presented on the properties and prospective uses of poly-2,2'-(m-phenylene)-5,5'-bibenzimidazole, which is generally referred to as PBI. Produced from the condensation of 3,3',4,4'-tetraaminobiphenyl and diphenyl isophthalate, PBI has been explored as a low-temperature adhesive, as a synthetic textile fiber with high moisture regain, and as a matrix for reinforced composites and in laminates for ablative heat shields. Market viability is still more potential than actual, but the polymer has market potential, especially with the current emphasis on flame-proof materials.

27-0036
GENERAL INFORMATION

Ter Haar, G.L. et al
METHYLCYCLOPENTADIENYL MANGANESE TRICARBONYL AS AN ANTIKNOCK:
COMPOSITION AND FATE OF MANGANESE EXHAUST PRODUCTS
J. Air Pollut. Control Assoc. 25 (8): 858-60 (1975)

The properties of the exhaust products resulting from the use of methyl cyclopentadienyl manganese tricarbonyl (MMT) as an antiknock agent in gasoline are described. It is concluded that no public health hazards will result from such use because of the very low concentration of MMT involved and because of the low toxicity of the manganese exhausted.

27-0037
GENERAL INFORMATION

Anon
PESTICIDE PLANT CLOSED
Chem. Week 117 (8): 19 (20 August 1975)

The finding of high toxic levels (2 to 25 ppm) of a chlorinated ketone in the blood of seven workers, who have been hospitalized (one with liver damage), has caused Life Sciences Products to close its Kepone pesticide plant in Hopewell, Va. Tests showed that about 30 other workers also had the pesticide in their blood, indicating higher levels present in the body's fatty tissue. Another 100 or so people, including former workers, will also be tested.

Possible cause, according to plant officials, could be plant modifications made to meet water effluent standards. Life Science Products is the sole manufacturer of the Kepone, most of which is exported, with only about 0.8% of production used in this country to control ants and cockroaches.

27-0038
GENERAL INFORMATION

Beechey, C.V. et al
CYTOGENETIC EFFECTS OF PLUTONIUM-239 IN MALE MICE
Nature 256 (5518): 577-8 (14 August 1975)

Although potential genetic hazards from plutonium-239 have been considered less likely than carcinogenic hazards, a recent study indicated an effect on the testes of mice. Consequently, this reported study was undertaken to determine the induction of chromosome aberrations in male mice exposed to α particles from Pu-239. The results indicate that α radiation has the "expected high relative biological effectiveness" for causing chromosome damage.

27-0039
GENERAL INFORMATION

Murray, Chris
SCIENTISTS ISOLATE SOLID OXONIUM SALTS
Chem. Eng. News 53 (33): 20 (18 August 1975)

Experiments conducted to develop new halogenated oxyfluorides via the hydrolysis of a halogen yielded instead some stable white solids, identified as oxonium salts. The new products, synthesized from antimony pentafluoride and hydrogen fluoride at low temperature, have unusual thermal stability. One possible use is the removal of traces of water from hydrogen fluoride gas streams, according to the Rocketdyne scientists who made the discovery.

See also: 28-0018, Shale Oil Extraction and Refining

28-0001
ASBESTOS

Anon
PPG's CORPUS CHRISTI PLANT CITED FOR ASBESTOS EXPOSURE VIOLATIONS
Chem. Week 117 (10): 10 (3 September 1975)

OSHA claims that PPG's Corpus Christi, Texas, chlorine plant has violated the asbestos standards. OSHA and the Oil Chemical & Atomic Workers Union are assessing amount of worker exposure at Corpus Christi. The union claims conditions are similar to those at PPG's plant in Tyler, Texas, where an outbreak of asbestosis occurred. Apparently, 400 workers and former workers at the Tyler plant are believed to be subject to cancer as a result of their exposure to asbestos.

28-0002
ASBESTOS

Harwood, Colin F.
ASBESTOS EMISSIONS FROM BAGHOUSE CONTROLLED SOURCES
Am. Ind. Hyg. Assoc., J. 36 (8): 595-603 (1975)

Although baghouses are the primary means of controlling emissions from asbestos processing plants, there seems to have been little work done on measuring baghouse efficiency in limiting asbestos fiber emissions.

In this study, the mass efficiency of the baghouses of five processing plants, where chrysotile asbestos was used exclusively, was measured. In addition, fiber size was measured via optical and electron microscopy. Mass removal efficiency generally was higher than 99%, but the number of fibers greater than 1.5 μm in length was about 10^4 fibers/m^3. Apparently, enough fibers penetrate the baghouse fabric filter to warrant caution in recirculating the air. Should the baghouse fail, there might be a health hazard for workers.

See also: 28-0024, General Information

Robertson, Larry W. and Chynoweth, David P.
ANOTHER HALOGENATED HYDROCARBON
Environment 17 (6): 25-7 (September 1975)

In this review of the previously reported toxic effects of polybrominated biphenyls (PBBs) accidentally fed to Michigan cattle, the authors cite several instances of the clear danger of ingested high levels of PBBs, but raise concern over the unknown effects on humans exposed to low levels over a long period of time.

Studies are still underway to determine how people not directly exposed to the contaminated farm products can be exposed to the PBBs. According to one unpublished report autopsies showed detectable levels in fat samples of three such people.

The various uses of PBBs and ways that they do or may enter the environment are discussed briefly.

See also: 28-0024, General information

28-0004
FLUOROCARBONS

Anon
CHLOROFLUOROCARBON BREAKDOWN ESTABLISHED
Chem. Eng. News 53 (35): 15-6 (1 September 1975)

NBS chemists, P.J. Ausloos and R.E. Rebbert, reported at the recent ACS meeting in Chicago that they have determined the photochemical mechanisms for the decomposition of chlorofluorocarbons in studies that involved the use of four different wave lengths in the ultraviolet region of the spectrum. Apparently, up to two atoms of chlorine can be formed from each molecule of fluorocarbon 11 and fluorocarbon 12.

Temperature, they report, may be important in the breakdown of the chlorofluorocarbons in the stratosphere. In measuring the absorption cross section (using fluorocarbon 12), a 10-fold increase was noted as the temperature increased from 234 to 442°K. This indicates that chlorofluorocarbons may take longer to break down at the stratospheric temperatures than has been presupposed.

28-0005
FLUOROCARBONS

Anon
MCA WILL SPEND $5 MILLION TO STUDY THE EFFECTS OF CHLOROFLUOROCARBONS. . .
Chem. Eng. News 53 (35): 7 (1 September 1975)

The Manufacturing Chemists Association will provide the government with research results of its studies on the effects of chlorofluorocarbons on the upper atmosphere. Such studies will include detection of chlorine oxide, a decomposition product of the chlorofluorocarbons in the atmosphere, using a microwave radar detection technique.

28-0006
FLUOROCARBONS

Kay, A.N.
OZONE LAYER (Letter to Editor)
Chem. Eng. News 53 (34): 5 (25 August 1975)

Commenting on a recent review of the chlorofluorocarbon controversy (See: CATS *19-0010), the author refutes the ozone destruction theory by suggesting that the action of sunlight on oxygen to form ozone will come into play. Any ozone destroyed will be formed again to yield no net change in the ozone concentration. Also, the suggestion is offered that reconstituted chlorofluorocarbon, which is incombustible, will gravitate towards the sun and "put the sun out"...!

28-0007
FLUOROCARBONS

Niemi, Carol K.
LETTER TO EDITOR
Aerosol Age 20 (8): 6 (1975)

Refuting a published statement that fluorocarbon propellants are used in oven cleaners, the author states that, although two new oven cleaners (one of which has been withdrawn) did contain fluorocarbons, nine others, accounting for about 94% of the market, do not.

In the typical aqueous, alkaline formulation of these products the carbon-halogen bond of the fluorocarbons ruptures to yield high levels of chloride ions that work to corrode the interior of the aerosol container and permit the oven cleaner to leak out of the container.

28-0008
FLUOROCARBONS

Anon
GAINING A PERSPECTIVE
Aerosol Age 20 (8): 18-22 (1975)

Reviewed here is the booklet, "Fluorocarbons", available from Kaiser Aluminum & Chemical Corp., Oakland, Calif., which reputedly presents a clear, comprehensive review of the fluorocarbon/ozone controversy. In five segments, the booklet describes the reactions of ozone and the ultraviolet, the economic impact of fluorocarbons, the issue at hand (reviewing the various theories), the positions of scientists in government and industry, and the future. Kaiser (a major producer of fluorocarbons) reports that, if the theory should prove to be correct, halting fluorocarbon production now instead of in 1978 would cut any ozone depletion by only 0.5%. Thus, the extra time to permit further research would not increase greatly any potential danger.

28-0009
FLUOROCARBONS

Anon
SPEAKERS UPDATE STATUS OF OZONE CONTROVERSY
Aerosol Age 20 (8): 30 (1975)

At a May 28 seminar held by the Packaging Institute in Washington, Dr. Ralph Cicerone indicated that scientists are generally in agreement about the potential hazards of fluorocarbons in the stratosphere, and that there is enough proof to warrant government action.

For industry, Robert Orfeo refuted Cicerone, citing various uncertainties in the ozone depletion theory and the need for more conclusive experimental evidence. Industry is supporting such studies as halocarbon detection, chlorine detection, and atmospheric chemistry studies at various universities, and is considering funding a study to develop stratospheric models with computers.

28-0010
FLUOROCARBONS

Anon
A SECOND STRATOSPHERIC RESEARCH BALLOON. . .
Chem. Eng. News 53 (34): 26 (25 August 1975)

The National Center for Atmospheric Research has launched and recovered its second balloon sent up to look for chlorofluorocarbons in the stratosphere; data are being analyzed.

Data collected by cryogenic samplers in the first balloon showed chlorofluorocarbons in the stratosphere that were evidently being broken down to chlorine atoms.

28-0011
FLUOROCARBONS

Anon
SCORER: OZONE THEORY IS 'UTTER NONSENSE'
Aerosol Age 20 (8): 23, 43 (1975)

The noted British Scientist, Dr. Richard S. Scorer, offers as his reasons for discounting the ozone theory: the inaccurate representation of the chemical reactions in the stratosphere via the computer model for the Rowland/Molina Theory; the fact that the ozone layer is not constant but varies from season to season, from day to night, and is ever being destroyed or created via natural processes; that the atmosphere receives much of its chlorine from volcanic eruptions, refuse burning, and other causes; that nature's checks and balances may help create more ozone; that potential health effects from decreased ozone are comparatively slight compared to other dangers to humans, etc.

Anon
FDA OPENS AEROSOL INQUIRY
Soap, Cosmet. Chem. Spec. 51 (8): 22 (1975)

Preparing for the possibility that fluorocarbons will be proved to be ozone depleters, FDA has ordered all manufacturers of drug products using fluorocarbon propellants to submit detailed formulations, production amounts and other information to the agency.

See also: 28-0024, General Information

28-0013
LIQUEFACTION AND GASIFICATION OF COAL

Squires, Arthur M. et al
FLASH HYDROGENATION OF A BITUMINOUS COAL
Science 189: 793-5 (5 September 1975)

Based on previous work by the U.S. Bureau of Mines on rapid noncatalytic hydrogenation of various coals at short gas residence times, which provided a high liquid yield, Illinois coal was flash heated (to 700°C in 1 sec) in flowing hydrogen at 100 atmospheres. The process converted 7% of the carbon in the coal to methane, 7% to ethane, and 10% to benzene, toluene, and xylenes.

28-0014
LIQUEFACTION AND GASIFICATION OF COAL

Klass, Donald L.
SYNTHETIC CRUDE OIL FROM SHALE AND COAL
Chemtech, pp. 499-510 (August 1975)

A review of the different processes under development for the liquefaction of coal and oil shale and the problems involved in these processes. Because each ton of shale oil processed provides less than a barrel of oil, a huge solids disposal problem is faced. Spent shale lacks the necessary composition that would make it a good fill for growing vegetation.

The low hydrogen content of coal makes it less attractive than shale for commercialization, but there is less of a disposal problem associated with the liquefaction of coal.

Gutierrez, Luis T. and Fey, Willard R.
FEEDBACK DYNAMICS ANALYSIS OF SECONDARY SUCCESSIONAL TRANSIENTS IN ECOSYSTEMS
Proc. Nat. Acad. Sci. U.S.A. 72 (7): 2733-7 (1975)

Based on Odum's tabular model of ecological succession, a theoretical dynamic model of the mutual causalities among abiotic and biotic matter and species diversity as they interact to produce secondary succession in ecological systems is proposed and validated.

Moffitt, A.E. et al
ABSORPTION, DISTRIBUTION AND EXCRETION OF TEREPHTHALIC ACID AND DIMETHYL TEREPHTHALATE
Am. Ind. Hyg. Assoc., J. 36 (8): 633-41 (1975)

A radiotracer study indicated that terephthalic acid and dimethyl terephthalate were rapidly absorbed and excreted by rabbits and rats to which the two compounds were administered orally and in other ways. There was no evidence of tissue retention of the compounds. Combined with earlier reports of low acute and chronic toxicity of these compounds, it appears that they do not represent a significant industrial health hazard. Workers should, however, avoid excessive or prolonged contact with either chemical.

A table presents physical and chemical properties of the two compounds, which find a large use in the production of linear crystalline polyester resins.

Anon
OCCUPATIONAL HEALTH ASPECTS OF TRICHLOROETHYLENE. . .
Chem. Eng. News 53 (34): 10 (25 August 1975)

MCA has asked NCI to cooperate in long-term inhalation studies of trichloroethylene to aid in assessing its occupational health effects. Study is sponsored by six industrial firms.

Anon
PRETREATMENT PERMITS REFINING OF SHALE OIL
Chem. Eng. News 53 (35): 25 (1 September 1975)

Metallic elements and other contaminants present in raw shale oil necessitate its pretreatment before refining. Coking and hydrotreating have been used to remove impurities. Although nitrogen can be removed by severe hydrotreating, arsenic must be removed before hydrotreating to prevent catalyst poisoning. Irradiation with ultraviolet light or treatment with metal oxides will remove the arsenic. Also, Arco now offers for licensing a process using caustic washes that reputedly reduces arsenic content from 40 ppm to 10 ppm.

SHALE OIL EXTRACTION AND REFINING

See: 28-0014, Liquefaction and Gasification of Coal

28-0019
VINYL CHLORIDE

Greek, Bruce F.
ETHYLENE BEGINS VIGOROUS RECOVERY
Chem. Eng. News 53 (35): 8-10 (1 September 1975)

A 9% rise in ethylene production in June 1975 presages a continuing rise through the rest of the year, with estimates of more than 2 billion lb. given for December 1975 production. Capacity expansions are planned for the next three years. One reason for optimism is the upsurge in derivatives production. Vinyl chloride production began to rise again in March with an upswing in the housing industry promoting the need for more polyvinyl chloride.

28-0020
VINYL CHLORIDE

Richards, R.J. et al
BIOLOGICAL REACTIVITY OF PVC DUST
Nature 256: 664-5 (21 August 1975)

Unlike silica and asbestos, the literature reveals a lack of detailed biological or biochemical information on PVC dust, either inhaled or ingested, and on its reactivity.

In the tests reported here, PVC dusts showed a high hemolytic potential, which was reduced when a soluble, surface associated agent was washed off. Samples of PVC tested contained only immeasurable amounts of VCM.

Anon
B.F. GOODRICH DEVELOPS CONTINUOUS STRIPPING PROCESS FOR PVC RESINS
Chem. Week 117 (10): 39 (3 September 1975)

B.F. Goodrich's new system for stripping vinyl chloride from PVC resins should be installed in all BFG plants by 1 Jan. 1976; it has been licensed to some other PVC manufacturers. Apparently, the method will yield PVC resins that will keep VCM emissions below anticipated EPA regulations.

VINYL CHLORIDE

See also: 28-0024, General Information

28-0022
GENERAL INFORMATION

Shea, Kevin P. and Lindler, Bert
PANDORA AND THE STORAGE TANK
Environment 17 (6): 12-5 (September 1975)

In 1971 over 60 horses in central and eastern Missouri died from an unknown disease, which also hospitalized a child, made several people ill, and killed dozens of pet cats and dogs and hundreds of birds. Three years later the epidemic was traced to a tank of industrial waste residues containing the very toxic 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD), a by-product of certain industrial and agricultural chemicals. A year earlier, TCDD was identified as a contaminant of 2,4,5-T, a herbicide used in Vietnam. TCDD is easily absorbed through the skin. Animals exposed to it suffer liver and blood vessel damage, chloracne, gastric ulcers, and loss of appetite. In the ppb range it induces birth defects in animals. In humans, TCDD is excreted slowly and may accumulate in the body. TCDD has a half-life in soil of about one year. The Missouri epidemic occurred after "still residues" from the production of trichlorophenol in a Verona, Missouri, plant, which were hauled away by a waste collection company, were sprayed at a stable. Five days later, birds were found dead and two horses became ill. Six months later, newly exposed horses also became ill. Some horses died; others survived, but were later unable to breed. PCBs were detected in the soil but the child affected by the disease did not show elevated levels of PCBs. Later, 32 to 33 ppm of TCDD was detected in soil samples. Contaminated soil was removed and no further incidents were reported. The problem now is how to dispose of 4,300 gallons of still residues remaining in a tank at Verona. Another concern is the unregulated sale of PCB-containing wastes by the same waste collection agency. Although less toxic than TCDD, the PCBs are poisonous, manifesting symptoms similar to those caused by TCDD.

28-0023
GENERAL INFORMATION

Anon
THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH HAS AVAILABLE. . .
Chem. Eng. News 53 (35): 7 (1 September 1975)

The Dry Color Manufacturers Association last June advised NIOSH that chromate pigment production may be a potential cancer source.

28-0024
GENERAL INFORMATION

Long, Janice R.
OSHA PUSHES AHEAD ON HEALTH STANDARDS
Chem. Eng. News 53 (35): 12-3 (1 September 1975)

In spite of a slow start -- only 15 new health standards in 4.5 years -- OSHA now seems to have surmounted various problems. First action on its planned program to update standards for 400 chemicals came with the recent publication of proposed standards for five ketones; before 30 Sept. OSHA plans to publish at least 10 proposed standards.

The 15 new health standards established regulate worker exposure to 13 carcinogens, including bis-chloromethyl ether, ethyleneimine, asbestos, and vinyl chloride.

Typical problems faced by OSHA are described briefly.

28-0025
GENERAL INFORMATION

Anon
HEW ASKS EPA TO CONSIDER VOIDING GE'S DISCHARGE PERMIT BECAUSE OF PCBs
Environ. Health Lett. 14 (17): 1-2 (1 September 1975)

HEW and the N.Y. State Environmental and Conservation Dept. have asked EPA to reconsider GE's permit to discharge PCBs in the Hudson River and Lake Champlain. According to an unpublished report, one grade of PCB at levels of 100 ppm may have caused malignant liver tumors in rats. Monkeys exposed to only 2.5 and 5 ppm have lost hair and weight, have developed acneform lesions and pregnancy problems.

EPA is currently reviewing the carcinogenic potential of PCBs, has asked industry for test data on the chemical properties and potential bioactivity of PCB substitutes, and is conducting other studies.

28-0026
GENERAL INFORMATION

Anon
PESTICIDE PLANT FINED
Chem. Week 117 (9): 14 (27 August 1975)

After high levels of the pesticide, Kepone, were detected in the blood of workers, OSHA fined Life Science Products $16,500 for four violations of protective safety measures at its plant in Hopewell, Va. EPA and OSHA will inspect Allied Chemical's Union Texas Petroleum plant in Baltimore where Kepone is used in preparing formulations for export. EPA will also inspect Life Science Products' plant because wastes from the plant show concentrations of 500-600 ppb of Kepone; the established limit is only 100 ppb.

28-0027
GENERAL INFORMATION

Morgan, Karl Z.
SUGGESTED REDUCTION OF PERMISSIBLE EXPOSURE TO PLUTONIUM AND OTHER TRANSURANIUM ELEMENTS
Am. Ind. Hyg. Assoc., J. 36 (8): 567-75 (1975)

Reviews the development of the current value of maximum permissible body burden of Pu-239 and discusses possible changes in the permissible exposure level. It is suggested that the linear hypothesis may not be conservative enough at low dose rates, especially for the actinide elements.

More research needs to be done on the particle problem before setting a satisfactory maximum permissible body burden for Pu-239 based on the lung as the critical organ. A reduction of the current maximum body burden based on bone is suggested.

28-0028
GENERAL INFORMATION

Deinzer, M. et al
TRACE ORGANIC CONTAMINANTS IN DRINKING WATER; THEIR CONCENTRATION BY REVERSE OSMOSIS
Water Res. 9: 799-805 (1975)

Before determining the potential health hazards of the many toxic organic chemicals that find their way into drinking water, it is necessary to determine accurately their concentration levels in the water. Reported here are the results of such studies using a reverse osmosis unit with a cellulose acetate membrane. Reverse osmosis can be used for measuring contaminant concentrations in large volumes of water and for detecting hydrocarbons, phthalates, chlorinated compounds, polyethers and other chemical classes.

28-0029
GENERAL INFORMATION

Gillespie, D.M. et al
A KINETIC MODEL FOR STATIC BIOASSAY OF INSECTICIDES
Water Res. 9: 817-9 (1975)

Although static bioassays, used to evaluate the effects of toxins in aquatic environment, are not too reliable, a mathematical model is described that permits more accurate estimation of dosage from which toxicity indicators can be derived. The model was tested with DDT as toxin and stoneflies as assay organisms.

29-0001
ASBESTOS

Sincock, Andrew and Seabright, Marina
INDUCTION OF CHROMOSOME CHANGES IN CHINESE HAMSTER CELLS BY EXPOSURE TO ASBESTOS FIBRES
Nature 257 (2251): 56-8 (4 September 1975)

Cultured chinese hamster cells were exposed for 48 hours and for 5 days at a concentration of 0.01 mg ml^{-1} to four different dusts -- chrysotile asbestos, crocidolite asbestos, glassfiber and glass powder. A table summarizing the results indicates that karyotypic alterations occurred primarily in those cells exposed to asbestos. Except for cells exposed for 5 days, to the chrysotile fibers, the longer exposure period did not significantly change the results of the 48 hour exposure. The multiple abnormalities produced at the chromatid and chromosomal levels of the test cells by asbestos fibers could lead to an *in vitro* screening test for asbestos and other carcinogens.

29-0002
ASBESTOS

Anon
UNION BLAMES NAVY FOR CANCER OUTBREAK AMONG SHIPYARD WORKERS
Chem. Week 117 (11): 14 (10 September 1975)

The AFL-CIO claims that failure of the Navy to provide proper protective equipment for shipyard workers has led to an increased incidence of cancer among the workers. Some 500,000 individuals could develop various cancers from inhalation of solvents, paints, lead chromates, and asbestos.

See: 29-0004, Benzidine

29-0003
BENZIDINE

Anon
BENZENE RINGS AND THE BLADDER
Lancet 2 (7931): 402 (30 August 1975)

Britain's Dept. of Health has recently resumed its tracing of former rubber and cable workers whose exposure to β-naphthylamine makes them susceptible to bladder cancer.

Mention is made of a short report by C.G.C. Gaches [Proc. Roy. Soc. Med. 68: 525 (1975)], who discusses the effects on bladder of some aromatic compounds, citing two nonmalignant cases from exposure to γ-benzene hexachloride (in a lindane fluid) and to pentachlorophenol. He points to the chemical structure similarity between phenyl phenol and naphthylamines, xenylamine, and benzidine, all known carcinogenic agent precursors.

29-0004
BENZIDINE

Rall, David P.
RESEARCHING HEALTH HAZARDS IN THE ENVIRONMENT
J. Am. Water Works Assoc. 67 (8): 447-8 (August 1975)

The urgent need for studies on the potential hazards of industrial chemicals and the development of systematic toxicity tests are stressed. The U.S. currently manufactures some 10,000 chemicals to which between 500 and 1,000 new products are added yearly.

Briefly reviewed are instances of past hazards -- illnesses and deaths of animals in Michigan that were fed feedstock contaminated with brominated biphenyls; the VCM problem; the discovery that bischloromethyl ether, used in polymerization, is a potential bronchogenic carcinogen at 0.10 ppm; and the presence in river waters of haloethers, the byproducts of ethylene manufacture. The sudden peak to about 80 million lb/year in 1970 of the PCB's and to about 1 billion lb/year of phthalic acid esters recently demonstrates the difficulty in predicting production increases or new uses.

29-0005
FLAME RETARDANTS

Slysh, Roman
FLAME-RETARDANT COATINGS FOR PLASTICS
J. Paint Technol. 47 (607): 31-6 (August 1975)

Plastics made flame-resistant by the incorporation of flame-retardant additives have certain disadvantages, including the generation of smoke and toxic gases, which have been considered the cause of fatalities following fires.

To counteract this effect, plastics were treated with an intumescent coating, a coating that bubbles and foams at high temperatures forming a multicellular insulating layer. Tests described in this paper indicate that such coatings at a thickness of 5 mils do reduce flame spread and smoke generation of plastics that melt above 170-180°C. Thicker coatings may work on plastics with melting points below 170°C. Formulas are given for typical latex-based and organic-based intumescent coatings, and reaction mechanism is discussed.

29-0006
FLAME RETARDANTS

Simpson, Harold N. and Phelps, Mary A.
HOW GLYCERINE, HAND LOTIONS AND BABY OIL AFFECT FIRE RETARDANT FABRICS
Am. Dyest. Rep. 64 (8): 69-70 (1975)

The use of three common household items -- glycerine, hand lotions, and baby oil -- can contaminate fire-retardant fabrics used for children's sleepwear, thus introducing a new hazard. The results of flammability tests are tabulated for cotton flannelette, nylon, and polyester fire retardant acetate tricot, after these materials had been contaminated with hand lotions and baby oil.

29-0007
FLUOROCARBONS

Anon
ATOMIC OXYGEN/AEROSOLS
Environ. Rept. 6 (9): 72 (8 September 1975)

A 111-page report (NASA CR-2529) reviews chemical reactions possible in the stratosphere that may cause ozone depletion; discusses possible recombinations of atomic oxygen. Report is available at $5.25 fron NTIS, U.S. Dept. Commerce, Springfield, Va. 22161 or through NASA/contractor channels.

29-0008
FLUOROCARBONS

Hester, Norman E. et al
FLUOROCARBON AIR POLLUTANTS
MEASUREMENTS IN LOWER STRATOSPHERE
Environ. Sci. Technol. 9 (9): 875-6 (1975)

Air samples collected in lower stratosphere (21,000, 40,000, and 60,000 ft) indicate that measured concentrations of fluorocarbon 11 and fluorocarbon 12 agree, in general, with the concentrations predicted by the Cicerone model. When compared with 1973 data, the new measurements reflect a trend toward increasing concentration levels, as anticipated from increased fluorocarbon production and release.

Anon
FLUOROCARBONS' ROLE IN OZONE DEPLETION THEORY RECEIVES ADDITIONAL DEBATE
J. Air Pollut. Control Assoc. 25 (9), 961 (1975)

Dr. R.L. McCarthy, director of Du Pont's "Freon" Products Laboratory, questions the reported confirmation of ozone depletion in the stratosphere from fluorocarbons, based on measurements of fluorocarbons in the stratosphere announced by the National Center for Atmospheric Research, Boulder, Colo.

McCarthy does not deny the presence of stratospheric fluorocarbons, but argues for studies to determine if the chlorine/ozone chain reactions in the stratosphere are similar to or different from those conducted in lab experiments.

See: 29-0004, Benzidine

29-0010
HYDRAZINE

Fairchild, M.D. and Sterman, M.B.
UNILATERAL SENSORY-MOTOR-RHYTHM (SMR) TRAINING IN CATS: A BASIS FOR TESTING NEUROPHYSIOLOGICAL AND BEHAVIORAL EFFECTS OF MONOMETHYLHYDRAZINE (MMH)
California Univ. Los Angeles School of Medicine, Final rep., 1 April 1972-31 March 1973, Contract F33615-72-C-1855. Rep. AMRL-TR-73-123 (July 1974). (AD-A011 578/2GA).

Cats were trained to produce sensory-motor-rhythm (SMR) in one brain hemisphere and to suppress it in the contralateral hemisphere. Rewarding brain stimulation was delivered automatically to the lateral hypothalamus when trains of SMR of specified duration and amplitude appeared only in the trained hemisphere. Evoked potentials induced bilaterally in the sensory-motor cortex by stimulation of radiations from the nucleus ventralis posteriolateralis of the thalamus were photographed and measured prior to, during, and following training. Unilateral SMR production could be achieved, but this training procedure had no systematic effect on thalamocortical evoked potentials; although changes unique to each of the three animals tested occurred more frequently in the trained hemisphere.

[Abstr. in: Government Reports Announcements 75 (17): 51 (22 August 1975)]

29-0011
HYDRAZINE

George, Marilyn E.
EFFECTS OF MONOMETHYLHYDRAZINE ON RED BLOOD CELL METABOLISM
Aerospace Medical Research Laboratory Wright-Patterson AFB Ohio, Tech. Rep. AMRL-TR-74-87 (March 1975). (AD-A011 548/5GA)

Monomethylhydrazine is used in various Air Force propellant systems. Chronic exposure to low concentrations of this compound results in an anemia characterized by methemoglobinemia, decreased levels of reduced glutathione and Heinz body formation. The study reported here was designed to determine if Heinz body formation was the principal mechanism of the red cell destruction or if MMH also had effects on the glycolytic pathways and/or red cell membranes which would contribute to the hemolytic mechanism. Human red cells were exposed in vitro to three levels of MMH for two, four, or six hours. Glucose utilization, lactate production and ATP levels were measured to determine effects on glucose metabolism; and osmotic fragilities, red cell potassium concentration, and malonyldialdehyde levels were measured to assess membrane effects.

[Abstr. in: Government Reports Announcements 75 (17): 50 (22 August 1975)]

Moore, Peter D.
CARBON DIOXIDE FLUX IN ARCTIC ECOSYSTEMS
Nature 257 (5522): 90 (11 September 1975)

Recent studies of carbon dioxide flux between soil, vegetation, and the atmosphere have shed additional light on the arctic terrestial biome. Additionally the studies indicate the potential usefulness of carbon dioxide flux as a means of approaching gross ecosystem energetics.

See: 29-0003, Benzidine

Dilling, Wendell, L. et al
EVAPORATION RATES AND REACTIVITIES OF METHYLENE CHLORIDE, CHLOROFORM, 1,1,1-TRICHLOROETHANE, TRICHLOROETHYLENE, TETRACHLOROETHYLENE, AND OTHER CHLORINATED COMPOUNDS IN DILUTE AQUEOUS SOLUTIONS
Environ. Sci. Technol. 9 (9): 833-8 (1975)

To determine the potential persistence of various chlorinated compounds in water, the authors studied the title compounds for their rate of evaporation, adsorption on soils, and the chemical reactions of hydrolysis and oxidation. They also determined the evaporation rates from water of 22 other chlorinated compounds. All compounds were tested at the level of 1 ppm in water under ambient conditions. The title compounds evaporated rapidly from slowly stirred water in the presence of natural or added contaminants, evaporating to 50% in less than 30 min. and to 90% in less than 90 min. Slower evaporation of the other 22 compounds indicates that, in general, a higher molecular weight slows the evaporation process. Therefore, at 1-ppm levels, low-molecular weight chlorinated compounds should not persist in natural waters. Hydrolytic-oxidation reaction half-lives for the title compounds were ∿6-18 months.

See: 29-0004, Benzidine

Anon
POLYURETHANES HAVE RESISTED THE RECESSION. . .
Chem. Eng. News 53 (37): 10 (15 September 1975)

Although flexible polyurethane foams showed a demand drop of 8-10%, in the first six months of 1975, rigid foams showed a slight rise in demand, according to a report from Peter Sherwood Associates, NYC. Demand for polyurethanes should accelerate to end of the 1970's. Annual growth rates predicted for 1974-1980: flexibles, 11.8%; rigids, 15.6%; and noncellular elastomers, 22.5%.

29-0015
VINYL CHLORIDE

Anon
ADDING TO VCM FUROR
Chem. Week 117 (11): 16 (10 September 1975)

With 60 days from 3 Sept. 1975 to respond to FDA's proposed regulation banning use of semirigid and rigid PVC in food-contact packagings, manufacturers are optimistic about proving lack of migration of VCM from PVC bottles and sheets. Goodrich Chemical, for one, has announced a new stripping technique for making PVC resins with less than 1 ppm VCM. On the other hand, the Health Research Group believes industry will not succeed in changing FDA's position because under the Delaney amendment food packaging materials should contain no VCM. Current detection methods permit detection of 0.1 ppb.

29-0016
VINYL CHLORIDE

Purchase, I.F.H. et al
CHROMOSOMAL AND DOMINANT LETHAL EFFECTS OF VINYL CHLORIDE
Lancet 2 (7931): 410-1 (30 August 1975)

To determine the potential mutagenicity of VCM in men and animals, studies were made of 86 workers, 56 of whom had been exposed to VCM. Lymphocyte cultures showed a significant increased ($P<0.05$) percentage of B, Cu, and Cs cells in the exposed workers, confirming earlier reports that VC causes chromosomal aberrations in humans.

However, in a dominant lethal study using mice, the results indicated that even at levels of 30,000 ppm VCM does not produce dominant lethal mutations. Apparently, the active metabolites of vinyl chloride do not reach the testis.

29-0017
VINYL CHLORIDE

Rawls, Rebecca L.
PVC MAKERS CONFIDENT ON FOOD-CONTACT USES
Chem. Eng. News 53 (37): 11-12 (15 September 1975)

Even if FDA bans the use of PVC food bottles and PVC blister packages for foods, the ruling will affect less than 1% of total U.S. capacity for PVC. Currently, about 50 million lbs of PVC goes into such products. Other permitted food related uses consume about 250 million lb/year of PVC and PVC water pipes use over 400 million lbs/year.

29-0018
VINYL CHLORIDE

Anon
STUDY INDICATES POSSIBLE LINK BETWEEN VINYL CHLORIDE AND HEART DISEASE
Chem. Week 117 (12): 36 (17 September 1975)

Preliminary studies indicate that vinyl chloride may cause heart and cardiovascular diseases. The 28 heart-related deaths found in a study of 771 workers at the KemaNord plant in Stockvik, Sweden, is considered excessive; 18 such deaths might have been anticipated. Additional studies are planned, however. Although the reported study covered the years 1944 to 1973, it involved workers employed for less than 3 years, was conducted in an area with a normally high rate of heart deaths, and include some Finnish workers.

29-0019
VINYL CHLORIDE

Kappus, H. et al
RAT LIVER MICROSOMES CATALYSE COVALENT BINDING OF ^{14}C-VINYL CHLORIDE TO MACROMOLECULES
Nature 257 (5522): 134-5 (11 September 1975)

This study with rat liver microsomes confirms earlier studies in bacterial test systems that vinyl chloride (and also vinylidene chloride) are mutagenic, but only so in the presence of rat liver microsomes that form the mutagenic metabolite. Tabulated data shows the need for NADPH-regenerating system in the covalent binding of VC metabolites to rat liver microsomes, and shows that VC metabolites can be bound to albumin and to RNA.

VINYL CHLORIDE

See: 29-0004, Benzidine

See: 29-0019, Vinyl Chloride

29-0020
GENERAL INFORMATION

Anon
TRACE KEPONE TO KIN
Chem. Week 117 (11): 18 (10 September 1975)

Ten relatives of 12 workers at Life Science Products plant in Hopewell, Va., were found to have from 0.1-0.8 ppm of the pesticide, Kepone, in their blood. A 2 ppm level is considered acute. Workers may have carried Kepone dust on their clothing.

Lab studies of tests of 119 of 149 former and present employees continue. Kepone handlers at Allied Chemical's Hopewell plant will be tested and plans now include testing of some 200 Hopewell households to determine potential community exposure.

29-0021
GENERAL INFORMATION

Anon
PCB HAZARD
Environ. Rep. 6 (9): 65-6 (8 September 1975)

Detection of excessively high levels of PCB's in Lake Michigan fish, as well as in fish in the Hudson River, adds impetus to the growing concern among EPA officials and others for the need of a drinking water standard for PCB's.

29-0022
GENERAL INFORMATION

Anon
PCP IN HUMANS
Environ. Rep. 6 (9): 66 (8 September 1975)

Low amounts of pentachlorophenol (PCP) have been found in the urine of students at Florida State University, Tallahassee. In addition, up to 70 ppb of PCP were found in seminal fluid. The latter portends potential birth defects and genital cancers, since PCP, which is found in various herbicides, has caused mutations in lab experiments. Residues of PCP averaging 10 ppm have been found in food and paper products found in Tallahassee supermarkets.

29-0023
GENERAL INFORMATION

Anon
PESTICIDE CITED AS POSSIBLE CARCINOGEN
Environ. Rep. 6 (9): 67 (8 September 1975)

EPA researchers warn that Atrazine, a widely-used pesticide, could be changed into a cancer-causing chemical in the human stomach. Atrazine reacts with nitrite yielding N-nitrosatrazine, a potential carcinogen.

Basis for concern: Atrazine has been detected in Iowa and Illinois drinking water supplies. Some meat preservatives contain nitrite compounds.

29-0024
GENERAL INFORMATION

Martell, James M. et al
PCB's IN SUBURBAN WATERSHED, RESTON, Va.
Environ. Sci. Technol. 9 (9): 872-6 (1975)

Detection of PCB's in Lake Anne, Reston, Va., confirms the theory the PCB's tend to spread and persist in water. Because Reston has no industrial or sewage discharge, the PCB's evidently resulted from various sources connected with the construction of waterfront property.

Tabulated data indicate about a 500-fold increase in PCB concentration from water to bed sediment, and a 3000-fold increase from water to fish.

29-0025
GENERAL INFORMATION

Anon
THE SENATE HAS VOTED TO BAN FEEDING OF DIETHYLSTILBESTROL TO ANIMALS. . .
Chem. Eng. News 53 (37): 10 (15 September 1975)

Diethylstilbestrol (DES), a growth stimulant, has caused cancer in small test animals. Thus, Senate bill S. 963 prohibits its being given to animals that will be used as food, unless HEW determines that DES is safe for humans. Also, use of DES as a morning-after contraceptive has been limited to medical emergency cases, and the label must carry a potential cancer warning. Bill S.963 must pass the House, however, before becoming a law.

29-0026
GENERAL INFORMATION

Anon
LETHAL GASES HELD RESPONSIBLE FOR DEATHS OF 12 NON-COAL MINERS IN RECENT MONTHS
Occup. Health Saf. Lett. 5 (16): 7 (22 August 1975)

The deaths of 12 non-coal miners in recent months has prompted the Mining Enforcement and Safety Administration (MESA) to order mine safety personnel to increase precautionary measures and to publicize the hazards of toxic and explosive gases found or used in mining operations.

29-0027
GENERAL INFORMATION

Anon
NIOSH REPORT BRINGS TOGETHER STUDIES ON MORTALITY PATTERNS IN STEEL INDUSTRY
Occup. Health Saf. Lett. 5 (16): 7-8 (22 August 1975)

A recent NIOSH report, "Comparative Cause-Specific Mortality Patterns by Work Area Within the Steel INdustry," reports on the analysis/of mortality patterns in more than 58,000 Alleghany County, Pa., steel workers in 1953. An excessive death rate from lung cancer was noted among coke oven workers, but 26 other causes of death are tabulated. Factors other than the work environment may have contributed to the mortality differences reported.

30-0001
ASBESTOS

Codding, C.N. and Cross, Frank L., Jr.
ASBESTOS
Pollut. Eng. 7 (9): 103 (1975)

Brief summary to provide answers to specific control problems touches upon typical sources of asbestos, its contamination effects, allowable concentrations, testing methods for the work environment, and control methods and equipment.

30-0002
ASBESTOS

Haley, Thomas J.
ASBESTOSIS: A REASSESSMENT OF THE OVERALL PROBLEM
J. Pharm. Sci. 64 (9): 1435-49 (1975)

With world production of four types of asbestos (amosite, anthophyllite, chrysotile, and crocidolite) at 3 million tons/year and with the increasing exposure of humans to asbestos fibers in air and in drinking water, this reassessment of asbestosis is timely. The review is based on the literature published primarily from 1961 through 1974 (includes one 1946 and one 1958 reference), and covers the following topics: sources and uses, analytical chemistry, biochemical aspects, industrial hygiene aspects, animal toxicology and carcinogenesis and human toxicology and carcinogenesis from various sources of exposure. It is concluded that greater attention should be given to analytical chemistry, particle size, and epidemiology, and that studies should be made on the effects resulting from the ingestion of various forms of asbestos fibers.

Klosterkotter, Werner and Robock, Klaus
NEW ASPECTS ON DUST AND PNEUMOCONIOSIS RESEARCH
Am. Ind. Hyg. Assoc., J. 36 (9): 659-68 (1975)

Pneumoconiosis occurs in miners and other workers exposed to the dusts resulting from the processing and treatment of raw materials. The effects of silica dioxide, coal dust, and asbestos and the mechanisms involved in their effects on lungs are discussed. It is suggested that electron transfer reactions may be harmful mechanism for silica dioxide. Although asbestos can also be considered a semiconductor in the physical sense, its different electron structure and other factors seem to indicate that the specific pathogenicity of asbestos dust is due primarily to specific properties of the fibers themselves.

Prokofeva, O.G.
INDUCTION OF HEPATIC TUMORS IN MICE BY BENZIDINE
EPA-TR-118-74, Translation of Voprosy Onkologii (USSR) 17 (5): 61-4 (1971)

Studies were performed on mice of the C3HA line which were sensitive to hepatotropic cancerogens. According to reports of several authors, the spontaneous development of hepatomas was observed in 1% at the most of C3HA mice. A comparison of the present studies with the indices of tumors developing spontaneously in mice of the C3HA line reveals the clearly expressed hepatotropic action of benzidine.

[Abstr. in: Government Reports Announcements 74 (4): 27-8 (21 February 1975)]

30-0005
BORON

Neuner, Terry E. et al
SPECTROPHOTOMETRIC DETERMINATION OF BORON IN BORONATED FERTILIZERS
J. Assoc. Off. Anal. Chem. 58 (5): 920-2 (1975)

This modification of the Picket et al method [J. Assoc. Off. Anal. Chem. 54: 796-800 (1971)] to analyze acid-soluble boron in fertilizers is shown to be inexpensive, convenient, and accurate for detection limits of 1 ppm. For the measurements described the Perkin-Elmer Model 403 atomic absorption instrument was used but any instrument with suitable capabilities can be used since the emission maximum is broad (half-intensity ca 8 nm).

Lee, Ki P. et al
OCTABROMOBIPHENYL-INDUCED ULTRASTRUCTURAL CHANGES IN RAT LIVER
Arch. Environ. Health 30 (9): 465-71 (1975)

The flame retardant composed of hepta-, octa-, nona-, and decabromobiphenyls (OBB), although an effective agent for flame resisting synthetic fibers, was dropped by Du Pont, when it was found to cause liver damage in rats fed the compound at 100 and 1000 ppm. The ultrastructure and morphogenesis of the resulting hepatocellular changes were studied via light microscopy and electron microscopy and the results are described here.

Fehringer, Norbert V.
DETERMINATION OF POLYBROMINATED BIPHENYL RESIDUES IN DAIRY PRODUCTS
J. Assoc. Off. Anal. Chem. 58 (5): 978-82 (1975)

The accidental deaths of dairy herds given feed contaminated with PBBs emphasizes the need for detecting PBBs in dairy products. Described are several gas-liquid chromatographic (GLC) analyses that serve that purpose, plus a gel permeation chromatographic (GPC) cleanup procedure, and a thin layer chromatographic (TLC) confirmation procedure.

Babish, John G. et al
POLYBROMINATED BIPHENYLS: TISSUE DISTRIBUTION AND EFFECT ON HEPATIC MICROSOMAL ENZYMES IN JAPANESE QUAIL
J. Agric. Food Chem. 23 (5): 879-82 (September/October 1975)

Japanese quail ate a semi-purified soybean protein-cornstarch diet containing from 0 to 100 ppm polybrominated biphenyl (PBB) but would not eat the food containing 1000 ppm. In tests conducted over a 9-week period, the PBB diet did not cause loss of appetite or retard growth. Egg production was not affected by diets containing 10 or 20 ppm PBB, but at 100 ppm egg production was reduced to 17% versus 68% in the controls and no eggs were hatched. Four liver microsomal enzymes were induced by the PBB diets, but no post-mortem gross or microscopic lesions were observed. Quail fed diets containing 500 ppm PBB died within a few days.

Obremski, Robert J.
DIOXANE
Pollut. Eng. 7 (9): 22 (1975)

Used as a solvent in lacquers, paints, dyes, and in some plastic and chemical manufacturing plants, 1,4-dioxane is a toxic chemical which should be kept out of the plant atmosphere. Dangerous both from acute and repeated exposures, inhalation of dioxane can cause intoxication and death. One death was reported from exposure over several days to 470 ppm of the compound, which produced bronchopneumonia, and damaged the CNS, the liver and the kidney, leading to the death. The ACGIH 8-hr weighted average threshold limit value for dioxane is 50 ppm. Dioxane is also flammable and may explode in concentrations of 2 to 22%/volume of air. Infrared spectrophotometry, mass spectrophotometry and gas chromatography can be used to detect its presence.

30-0010
FLAME RETARDANTS

Anon
FOR CHEMICALS AND ADDITIVES A NEW SPLASH IN R & D
Mod. Plast. 52 (9): 41-58 (1975)

Despite declining use of chemicals and additives in 1975, R & D developments are prolific. This review covers market performance and new products in the fields of additive lubricants, antioxidants, flame retardants, plasticizers, UV stabilizers, etc. For flame retardants, a slow 1975, due in part to large inventories, should give way to an improving market in 1976 and later. Plastic TV cabinets use 3000 to 4000 tons of FR chemicals, but intumescent coatings on the interior of TV cabinets may cut into this market. New FR compounds continue to use bromine, phosphorus, and antimony oxide. A market slump for UV stabilizers in the first half of 1975 now shows signs of picking up. New products include several from Borg-Warner that combine the synergistic effect of phosphites with stabilizers.

30-0011
FLAME RETARDANTS

Lehmann, Edward J.
FIRE RESISTANT FIBERS AND TEXTILES. A BIBLIOGRAPHY WITH ABSTRACTS
NTIS/PS-74/111

This bibliography contains 124 selected abstracts of research reports retrieved using the NTIS on-line search system--NTISearch. The cited reports cover the preparation and flammability of organic flame resistant fibers and textiles. This includes flameproofing additives, flammability standards, and new cellulosic synthetic resins.

[Abstr. in: Government Reports Announcements 75 (2): 95 (24 January 1975)]

See: 30-0006, Brominated Biphenyls
30-0007, Brominated Biphenyls

30-0012
FLUOROCARBONS

Anon
MORE PROPELLANTS HEAT
Chem. Week 117 (13): 18 (24 September 1975)

A NASA scientist offers the hypothesis that production of fluorocarbons at their current level would promote a 2 ppb concentration in the atmosphere, resulting in a 1.6°F rise in average worldwide temperature. This is above the 0.09°F change in temperature needed to cause major changes in rainfall, wind patterns, and ice cover.

30-0013
FLUOROCARBONS

Stein, Lawrence
HALOCARBON PROPELLANTS (Letter to Editor)
Chem. Eng. News 53 (38): 74 (22 September 1975)

Halocarbons emit toxic thermal decomposition products when in contact with hot electric heating elements or when sprayed near gas, oil or wood flames (in one test, guinea pigs died in 5 to 15 minutes after exposure to gases formed when Freons 11, 12, 22, 113, and 114 were sprayed near a lighted gas stove). Also, it has been reported that metal parts in clothes driers are damaged by the hydrochloric and hydrofluoric acids resulting from the propellants in fabric softeners and antistatic conditioners. These facts prompt the writer to question the effects of fluorocarbons on the users and to urge a thorough study of their potential pulmonary hazard.

30-0014
FLUOROCARBONS

Booz, Charles S. Jr.
HALOCARBON PROPELLANTS (Letter to Editor)
Chem. Eng. News 53 (38): 74, 82 (22 September 1975)

Answering the question posed by Lawrence Stein (ibid, p.74), the writer reports that Du Pont warned against using high fluorocarbon concentrations near open flames but points out that the guinea pigs, mentioned by Stein, were tested in an area that did not in the least resemble home conditions. He mentions the tests conducted by Dr. Nancy Flowers and others that offer reassurances that in normal use the concentrations of fluorocarbons are not sufficiently high to pose any great human hazard. He also states that in a Du Pont test with clothes driers an eventual malfunction was not attributable to the fluorocarbon propellant.

30-0015
FLUOROCARBONS

Niazi, Sarfaraz and Chiou, Win L.
FLUOROCARBON AEROSOL PROPELLANTS VI: INTERSPECIES DIFFERENCES IN SOLUBILITIES IN BLOOD AND PLASMA AND THEIR POSSIBLE IMPLICATIONS IN TOXICITY STUDIES
J. Pharm. Sci. 64 (9): 1538-41 (1975)

When extrapolating the results of the toxic effects of fluorocarbons from animal studies to predict their toxicity in humans, the possibility of interspecies differences may be a factor to be considered, perhaps making the extrapolations less important. Interspecies differences in the absorption, distribution, metabolism, and elimination of 3 fluorocarbons (dichlorofluoromethane, dichlorotetrafluoroethane, and trichloromonofluoromethane), which are gases at 37°, may be affected by parameters important for gaseous anesthetics; e.g., the solubilities of the fluorocarbons in the blood and plasma of different species. The variations in solubilities of the 3 propellants in the blood (about fourfold) and in the plasma (more than 30-fold) of humans, monkeys, dogs, rats, and mice and the even greater differences in the partitioning of the compounds between blood cells and plasma indicate that significant differences in the pharmacokinetics of the fluorocarbons can be expected and should be considered in the extrapolation of toxicity data.

30-0016
FLUOROCARBONS

Peng, Geoffrey W. and Chiou, Win L. (Letter to Editor)
FLUOROCARBON AEROSOL PROPELLANTS VII: INTERACTION STUDIES WITH HUMAN AND BOVINE GLOBULINS USING PARTITION COEFFICIENT METHOD
J. Pharm. Sci. 64 (9): 1577-8 (1975)

The interactions between fluorocarbons (trichloromonofluoromethane, dichlorodifluoromethane, and dichlorotetrafluoroethane) and bovine γ-globulin were compared with the interactions of these compounds and human γ-globulin, using the partition coefficient method. The partition coefficients in the globulin solutions were only slightly less than those in plain buffer solution, indicating an insignificant degree of interaction.

30-0017
FLUOROCARBONS

Schwartz, Herbert
BLAMES CHLOROFORM FOR OZONE DAMAGE (Letter to Editor)
Household and Pers. Prod. Ind. 12 (9): 8 (1975)

The writer suggests that chloroform, rather than aerosol propellants, may be helping to deplete the ozone layer. Volatile halogenated hydrocarbons formed during the chlorination of waste and drinking water evolve into the atmosphere and into the ozone layer. The amount of chlorine used in water treatment processes dwarfs the amount of Freon aerosol propellants used to date.

30-0018
FLUOROCARBONS

Anon
DU PONT REVIEWS NBS FLUOROCARBON/OZONE FINDINGS
AIR/WATER Pollut. Rept. 13 (36): 357 (8 September 1975)

While arguing that the recent NBS study on the fluorocarbon/ozone controversy offers no new information but actually casts doubt on the completeness of the computer model used to predict ozone depletion, J.P. Jesson of Du Pont acknowledges the importance of the finding by P.J. Ausloos and R.E. Rebbert of NBS (See: CATS *28-0004) on the effect of temperature on the breakdown of fluorocarbons by ultraviolet light, which could change calculated vertical distributions of fluorocarbons.

30-0019
FLUOROCARBONS

Anon
MORE TALK ON AEROSOLS
Chem. Week 117 (14): 16 (1 October 1975)

Public hearings were held in Madison, Wis., on a bill that proposes banning sale of aerosols by 1980, leaving time for collecting more scientific data on the fluorocarbon/ozone controversy. A Du Pont representative argued that the bill could upset Wisconsin's economy; gross sales of fluorocarbon aerosols in the state run about $45 million a year. The bill may be considered in a special November legislative session.

F.J. Rowland and R.J. Cicerone appeared at the Wisconsin hearings and also before the Senate Committee on Aeronautical and Space Sciences. In Wisconsin, Rowland reported that although the atmosphere can absorb only about 25,000 tons of fluorocarbons/year, some 800,000 tons are reaching the atmosphere. Cicerone urged the committee to regulate fluorocarbons 11, 12, 113, 114, and perhaps 21 and 22. He also cautioned about possible harmful effects on the stratosphere of nitrous oxide from nitrogen-based fertilizers and the effects of other chemicals.

Howard, Philip H. and Durkin, Patrick R.
PRELIMINARY ENVIRONMENTAL HAZARD ASSESSMENT OF CHLORINATED NAPHTHALENES, SILICONES, FLUOROCARBONS, BENZENEPOLYCARBOXYLATES, AND CHLOROPHENOLS
Syracuse Univ., Research Corp., N.Y., Interim Rept. (November 1973) EPA/560/2-74-001, EPA Contract 68-01-2202 (PB 238 074/9GA)

A literature search of pertinent information and data on chlorinated naphthalenes, silicones, fluorocarbons, benzenepolycarboxylates, and chlorophenols was conducted to determine any hazard to man or the environment from commercial use of these chemicals. Information was gathered on physical and chemical properties, production and usage, environmental contamination, monitoring and analysis, environment transport and fate, environmental effects, and toxicity.

[[Abstr. in: Government Reports Announcements 74 (4): 78 (21 February 1975)]

30-0021
ISOCYANATES

Anon
NEW ENGINEERING PLASTIC DEVELOPED BY DOW
Chem. Week 117 (13): 31 (24 September 1975)

Urethane molded parts up to six inches thick can now be produced by a process developed at Dow Chemical Co. in which the thermoplastic can be cured in a minute or less. The chemical components consist of a polyol, an isocyanate, and a chemical that acts as a heat sink absorbing heat at the time of set. Packaging Machinery Corp. is making the liquid-injection-molding equipment.

30-0022
ISOCYANATES

Smith, Wayne E. and La Shelle, John R.
CHARACTERISTICS OF ATMOSPHERIC EMISSIONS FROM POLYURETHANE RESIN MANUFACTURE
Midwest Research Institute, Kansas City, Mo., Final Rept. (October 1974)
EPA/650/2-74-107, EPA Contract 68-02-0228 (PB 237 420/5GA)

The report describes the characterization of air pollutant emissions from a polyurethane resin manufacturing plant. Samples were taken before and after the air pollution control device (scrubber). Analysis for toluene di-isocyanate (TDI) and amines was conducted both on site and on a delayed basis. The sampling train included an impinger for colorimetric measurement of TDI. Cryogenic traps and a tape sampler for TDI were also used for the scrubber inlet samples. The outlet sampling manifold consisted of evacuated bulbs in place of the cryogenic traps because of the high moisture content. TDI emissions were found to be maximum in the first part of the resin formation reaction. It appears there is no emissions hazard. The scrubber had negligible effect on the TDI emissions.

[Abstr. in: Government Reports Announcements 75 (2): 115 (24 January 1975)]

30-0023
LIQUEFACTION AND GASIFICATION OF COAL

Hammond, Ogden and Zimmerman, Martin B.
THE ECONOMICS OF COAL-BASED SYNTHETIC GAS
Technol. Rev. 77 (8): 42-51 (July/August 1975)

Considerable work has been done on the technical feasibility and process development for gasification of coal yet this product may prove to be to costly. Factors affecting the costs have not been thoroughly investigated—such as the quality of the coal which would influence fuel stock costs and the location of the deposits would influence transportation costs. Also process water requirements can prove to be very expensive. The benefits of the heat pump, operated by electricity and modified for use in space heating may prove to be the least expensive method.

30-0024
LIQUEFACTION AND GASIFICATION OF COAL

Anon
SUIT COOLS COAL PLANS
Chem. Week 117 (14): 13 (1 October 1975)

Coal mining operations of Federal lands under lease in the Northern Great Plains region have been affected by the U.S. District Court's decision that environmental impact statements will be required before the leases are granted. Exxon's Carter Oil affiliate, and Shell Oil (Crow Indian Reservation) have suspended operations as a result of the court's decision.

30-0025
LIQUEFACTION AND GASIFICATION OF COAL

Kalfadelis, C.D. and Magee, E.W.
EVALUATION OF POLLUTION CONTROL IN FOSSIL FUEL CONVERSION PROCESSES.
GASIFICATION. SECTION I. SYNTHANE PROCESS.
Esso Research and Engineering Co., Linden, N.J., Final Rept. June 1974
Environmental Protection Technology Series GRU.4DJ74 EPA/650/2-74-009b,
EPA Contract 68-02-0629 (PB 237 113/6GA)

The report gives results of a review of the U.S. Bureau of Mines' Synthane Coal Gasification Process from the standpoint of its potential for affecting the environment. Where possible, it estimates the quantities of solid, liquid, and gaseous effluents, as well as the thermal efficiency of the process. It proposes a number of possible process modifications or alternates, and points out new technology needs.

[Abstract in: Government Reports Announcements 75 (2): 114 (24 January 1975)]

30-0026
LIQUEFACTION AND GASIFICATION OF COAL

Ball, D., et al
STUDY OF POTENTIAL PROBLEMS AND OPTIMUM OPPORTUNITIES IN RETROFITTING INDUSTRIAL PROCESSES TO LOW AND INTERMEDIATE ENERGY GAS FROM COAL
Battelle Columbus Labs., Ohio, Final Rept. May 1974, Environmental Protection
Technology Series EPA/650/2-74-052, EPA Contract 68-02-1323 (PB 237 116/9GA)

The report compiles background information, including environmental considerations, on the potential for retrofitting existing industrial processes to the use of low and intermediate energy gas from coal. Potential problems in retrofitting processes are analyzed. Processes where retrofit is most attractive are identified, along with estimates of their annual energy requirements. Also, current commercially available gasification systems and representative gas cleanup systems are described and available data summarized.

[Abstract in: Government Reports Announcements 75 (2): 114 (24 January 1975)]

Shaw, H. and Magee, E.M.
EVALUATION OF POLLUTION CONTROL IN FOSSIL FUEL CONVERSION PROCESSES.
GASIFICATION: SECTION 1. LURGI PROCESS.
Exxon Research and Engineering Co., Linden, N.J., Final Rept. July 1974
GRU.5DJ.74 EPA/650/2-74-009-c, EPA Contract 68-0629 (PB 237 694/5GA)

A process analysis of the Lurgi Dry Ash Gasification Process for high Btu gas was carried out. The process has been reviewed from the standpoint of its potential for affecting the environment. The waste stream compositions were calculated for a 250 MM scfd synthetic natural gas plant using a subbituminous coal. Thus, the quantities of solid, liquid, and gaseous pollutants were estimated, where possible. The thermal efficiency for various process alternatives was calculated. A number of process modifications which would reduce pollution and/or increase thermal efficiency were suggested. The technology needs to control pollution were assessed.

[Abstract in: Government Reports Announcements 75 (3): 52 (7 February 1975)]

30-0028
MODEL ECOSYSTEMS

Blau, G.E. et al
ECOKINETICS: A STUDY OF THE FATE AND DISTRIBUTION OF CHEMICALS IN LABORATORY ECOSYSTEMS
AICHE J. 21 (5): 854-61 (September 1975)

A laboratory scale ecosystem can be used to study different amounts and forms of a chemical in the environment by the analysis of the kinetic transformation within and between the different components of the model system. Samples are collected at various times and information obtained on a sequence of concentrations of the chemical and its metabolites as it moves through the system while observing the kinetic behavior. These data can be used as a quantitative measure to assess environmental impact.

30-0029
MODEL ECOSYSTEMS

Lu, Po-Yung et al
EVALUATION OF ENVIRONMENTAL DISTRIBUTION AND FATE OF HEXACHLOROCYCLOPENTADIENE, CHLORDENE, HEPTACHLOR, AND HEPTACHLOR EPOXIDE IN A LABORATORY MODEL ECOSYSTEM
J. Agric. Food Chem. 23 (5): 967-73 (September/October 1975)

Results of a study on the distribution and degradation products in a model ecosystem for chlordene, heptachlor and heptachlor epoxide show that heptachlor epoxide is highly stable in biological systems. The compounds were evaluated in food chain organisms in two laboratory model ecosystems and in vitro by sheep liver chromosomes.

30-0030
MODEL ECOSYSTEMS

Yu, Ching-Chieh et al
FATE OF TRIAZINE HERBICIDE CYANAZINE IN A MODEL ECOSYSTEM
J. Agric. Food Chem. 23 (5): 1014-15 (September/October 1975)

Carbon 14 labelled Cyanazine was used in a 35 day degradation study in a model ecosystem. Radioactivity in the water increased steadily over the test period indicating slow degradation of the triazine ring to carbon dioxide. However, no evidence was found in the aquatic organisms to indicate that cyanazine concentrates through the food chain.

30-0031
MODEL ECOSYSTEMS

Lacaze, Jean-Claude
MARINE MOLYSMOLOGY: THE PRIMARY PRODUCTION OF EXPERIMENTAL ECOSYSTEMS SET UP IN THE RANCE RIVER ESTUARY. EFFECT OF CRUDE OIL
EPA-TR-86-75 November 1974 (EPA Translating Services Section) Trans. of Academie des Sciences, Paris, Comptes Rendus (France) 278: 2531-34 (May 13, 1974)
(PB 237 777-T/GA)

Crude oil (Kuwait) discharged into experimental ecosystems resulted in a sharp 50% decrease in primary production the day after pollution. This began to lessen the following day (25%) and disappeared on the third day. The fourth day marked the onset of toxicity which gradually increased until primary production was almost totally inhibited one week after pollution. This inhibition phase lasted ten days. During the rest of the experimental period, the primary production of the polluted ecosystems was approximately half that of the control ecosystem.

[Abstract in: Government Reports Announcements 75 (3): 40 (7 February 1975)]

30-0032
NITRILOTRIACETIC ACID
(NTA)

Anon
NTA STILL ANOTHER REPORT
Household and Pers. Prod. Ind. 12 (9): 8 (1975)

HEW has issued a second final report from its NTA subcommittee. They feel that the available evidence is indicative of a carcinogenic effect on the urinary tract in both rats and mice. However, test dosages for rats was 400,000 times as great as human exposure would be.

See: 30-0010, Flame Retardants

30-0033
PHTHALATES

Piekacz, Hanna
THE EFFECT OF DIBUTYL- AND DIOCTYL-PHTHALATES ON RATS WITH ORAL FEEDING DURING PROLONGED TESTING. PART I. APPLICATION AND TOXICOLOGICAL PROPERTIES OF DIBUTYL- AND DIOCTYL-PHTHALATES
Trans. of Roczniki Panstwowego Zaklada Higieny (Poland) 22: 55-61 (1971)

The use of dibutyl- and dioctyl-phthalates is discussed a propos of legislation in various countries, as well as their toxicological properties. This study serves as an introduction to research on hyperacute and extended toxicity of both phthalates.

[Abstract in: Government Reports Announcements 75 (3): 50 (7 February 1975)]

30-0034
PHTHALATES

Williams, David T. and Blanchfield, Burke J.
THE RETENTION, DISTRIBUTION, EXCRETION, AND METABOLISM OF DIBUTYL PHTHALATE-7-^{14}C IN THE RAT
J. Agric. Food Chem. 23 (5): 854-8 (September/October 1975)

Dibutyl phthalate did not accumulate in the tissues or organs of rats fed for 12 weeks on one gram of compound/kilogram of feed. In a study using DBP-7-^{14}C, 93.5% of the radioactivity was excreted from the urine within 48 hours. Autoradiography revealed one major metabolite and three minor metabolites. No gross pathological changes were evident in the tissues.

See: 30-0021, Isocyanates

30-0035
VINYL CHLORIDE

Anon
NEW POLYESTER TAKES ON PVC IN PACKAGING
Chem. Eng. News 53 (38): 6 (22 September 1975)

A new polyester material suitable for food packaging meets the CFR food additive regulation 21, and has been accepted by the Dept of Agriculture for packaging meat and poultry. The tradename for Eastman Chemicals new product is Kodar, and it appears to have many advantages over rigid PVC in blister packaging.

30-0036
VINYL CHLORIDE

Mack, W.A.
VCM REDUCTION AND CONTROL
Chem. Eng. Prog. 71 (9): 41-4 (1975)

An effective method for removing vinyl chloride monomer from the polymer resin has been developed. This is done in the mixer before processing. It combines an aspirator fitted to the mixer to draw the monomer laden air from the mix and an air stripping step in which air passes upward through the material taking out additional VCM from the mix. The basic research development, and method resulted from a joint research program of Imperial Chemicals Industries, Ltd. and T.K. Fielder, Ltd.

30-0037
VINYL CHLORIDE

Bell, Z.G. Jr., et al
CONTROL METHODS FOR VINYL CHLORIDE
Chem. Eng. Prog. 71 (9): 43-7 (1975)

Methods for protecting personnel at PPG Industries vinyl chloride plants include a means of collecting quality control samples in a bomb, making the analyses in a hood, and returning the unused portion of the VC sample to the processing operation so that the monomer is confined. A precise, closed routine is followed for loading the product into tank cars and ships. High pressure nitrogen is used in the plant where purging operations are needed to prevent escape of the gas.

30-0038
VINYL CHLORIDE

Wheeler, R.N. Jr., and Sutherland, M.E.
CONTROL OF IN-TRANSIT VCM
Chem. Eng. Prog. 71 (9): 48-53 (1975)

To meet VCM regulations, special devices, equipment, and systems will have to be provided. Gauging devices will need to be installed on tank trucks, tank cars and barge tanks. One which has worked well on tank cars is a float magnetically coupled to a tape system. Tank car size of new cars is being limited to 25,500 gallons. Pipe lines will require regular monitoring for leaks. Scavenging systems will be required to strip off vinyl chloride liquid or monomer when the need arises. Inert gas purging of scavenged equipment will remove the last traces of the monomer. Finally, automation is the best approach to control of personnel exposure to vinyl chloride according to Union Carbide Corp.'s view.

30-0039
VINYL CHLORIDE

Mantell, G.J. et al
STRIPPING VCM FROM PVC RESINS
Chem. Eng. Prog. 71 (9): 54-62 (1975)

A description of the stripping techniques being studied at Air Products and Chemicals, Inc. covers removing the VC monomer from aqueous slurries - the suspension process - in the polymerization reactor or in a special stripping vessel. Variables that affect the process are time, temperature, and pressure. The vinyl chloride which is removed is prepared for reuse by compression and condensation.

30-0040
VINYL CHLORIDE

Severs, L.W. and Skory, L.K.
MONITORING PERSONNEL EXPOSURE TO VINYL CHLORIDE, VINYLIDENE CHLORIDE AND METHYL CHLORIDE IN AN INDUSTRIAL WORK ENVIRONMENT
Am. Ind. Hyg. Assoc., J. 36 (9): 669-76 (September 1975)

The use of activated carbon as an adsorbent is suggested for personnel monitoring in areas where workers are exposed to vinyl chloride, vinylidene chloride, and methyl chloride. A satisfactory method of desorbing the carbon while insuring the integrity of the VC sample was to use carbon disulfide at dry ice temperature.

30-0041
VINYL CHLORIDE

Anon
PHS TO URGE MORE RELIANCE ON SCIENCE FOR HEALTH PROTECTION AGAINST VINYL CHLORIDE:
Environ. Health Lett. 14 (18): 4 (15 September 1975)

EPA is in the process of setting vinyl chloride standards for the general public. HEW is said to have suggested the need for more scientific methods as a basis for establishing these limits. However, this would require considerable additional research. A major concern of these agencies is the safety of people living in the vicinity of plants using vinyl chloride or polyvinyl chloride.

See: 30-0040, Vinyl chloride

30-0042
GENERAL INFORMATION

Sikka, Harish C. et al
UPTAKE, DISTRIBUTION, AND METABOLISM OF ENDOTHALL IN FISH
J. Agric. Food Chem. 23 (5): 849-51 (September/October 1975)

Bluegills absorbed less than 1% of the herbicide, endothall, from water containing 2 ppm endothall/500 ml water, during a 96-hr exposure. Concentration of endothal was highest in the viscera and lowest in the flesh. Concentration in the viscera started to decline after 24 hours, indicating distribution to other tissues. Endothal, when fed to bluegills through the digestive tract, was absorbed by the intestinal tract, but 73% was eliminated during the 48-hr test period. Again, the concentration was highest in the viscera, lowest in the flesh. Unlike aquatic microorganisms, bluegills apparently cannot metabolize this herbicide.

30-0043
GENERAL INFORMATION

Anon
AMERICAN CYANAMID IS ENTERING A BIG HERBICIDE MARKET. . .
Chem. Eng. News 53 (38): 14 (22 September 1975)

New from American Cyanamide is Prowl, a dinitroaniline compound aimed at the $400 million corn and cotton herbicide market. The company expects to be on stream by 1978 in Hannibal Mo., plant now being built; meanwhile, contract manufacturers are being used.

30-0044
GENERAL INFORMATION

Burke, Donald P.
METHANOL
Chem. Week 117 (13): 33-7, 39-42 (24 September 1975)

Review discusses potential uses, technology, and economics of methanol for various fuel purposes: regasification to methane, fuel for gas turbines, or in motor fuels. Another potential use, as a source for single-cell protein, could use up to 33,000 tons/day by 1980.

30-0045
GENERAL INFORMATION

Anon
EPA PLANS TO STUDY NITROSAMINES IN AIR
Chem. Eng. News 53 (39): 7 (29 September 1975)

From 0.014 to 0.96 ppb of dimethyl nitrosamine have been detected in the ambient air in several eastern cities. The nitrosamines may arise from industrial processes or they may be forming from atmospheric reactions of nitrogen oxides and amines. EPA will study nitrosamines in air, and will also include them in current studies of drinking water contaminants.

30-0046
GENERAL INFORMATION

Anon
HEXAMETHYLPHOSPHORAMIDE CAUSES CANCER IN LABORATORY ANIMALS. . .
Chem. Eng. News 53 (39): 17 (29 September 1975)

In studies at Du Pont's Haskell Labs., Newark, Del., rats developed cancer after inhaling HMPA vapor for six to eight months. The chemical is used as a laboratory solvent and in synthetic fiber manufacture. As yet, there is no evidence of cancer in other animals and no adverse health effects have been noted in workers at Du Pont's Deepwater, N.J., plant, where the chemical is made, or at the Richmond, Va., plant, where it is used.

30-0047
GENERAL INFORMATION

Brown, Stephen M. et al
EFFECT ON MORTALITY OF THE 1974 FUEL CRISIS
Nature 257 (5524): 306-7 (25 September 1975)

First-quarter 1974 mortality rates were down in San Francisco County and Alameda County over first-quarter 1973 rates. The period of decreased death rates coincides with a period in which retail gasoline sales were down 9.5%.

31-0001
ARSENIC

Copenhaver, E.D. and Wilkinson, B.K.
TRANSPORT OF HAZARDOUS SUBSTANCES THROUGH SOIL PROCESSES. Vol. I. ARSENIC, BERYLLIUM, CADMIUM, ZINC, AND OTHERS
ORNL-EIS-74-70 (Pt. 1). Oak Ridge Natl. Lab., Contract W-7405-eng-26 (November 1974)

This bibliography is intended for use by personnel concerned, either via research or management, with the disposal of hazardous wastes, other than sewage sludge, on land. It is the result of a search of recent literature and includes information on the transport, transformation, and soil retention of arsenic, asbestos, beryllium, cadmium, chromium, copper, cyanide, lead, mercury, selenium, zinc, halogenated hydrocarbons, pesticides, and other hazardous substances. The literature search focused on processes directly related to transport (adsorption, ion exchange, etc.) and documentation of the occurrence and extent of transport while specifically excluding topics such as uptake and translocation by plants, theoretical modeling, and effects on microorganisms and processes mediated by microorganisms.

[Abstract in: Nuclear Sci. Abstrs. 31 (5): 1139
(15 March 1975)]

31-0002
ARSENIC

Copenhaver, E.D. and Wilkinson, B.K.
TRANSPORT OF HAZARDOUS SUBSTANCES THROUGH SOIL PROCESSES. VOL. 2. PESTICIDES.
ORNL-EIS-74-70 (Pt. 2). Oak Ridge Natl. Lab., Contract W-7405-eng-26 (November 1974)

This bibliography is intended for use by personnel concerned, either via research or management, with the disposal of hazardous wastes, other than sewage sludge, on land. Information on the transport, transformation, and soil retention of a number of hazardous substances is presented in Volume 1. This volume contains citations on pesticides and detailed information on chemical nomenclature and structures of pesticides is appended to this volume.

[Abstract in: Nuclear Sci. Abstrs. 31 (5): 1139
(15 March 1975)

31-0003
ASBESTOS

Anon
OSHA PROPOSES MORE TOXIC SUBSTANCE RULES
Chem. Eng. News 53 (40): 8 (6 October 1975)

OSHA's proposed new occupational standard for asbestos, which would revise the standard of 7 June 1972, calls for a reduction in the permissible exposure for an 8-hr period to only 0.5 fiber/cc instead of 5, and a reduction in the 15-minute ceiling exposure limit to 5 fibers/cc instead of 10. Retention of monitoring and medical records would cover a 40-year period or would be for the duration of the worker's employment plus 20 years, whichever is longer. This is another drastic change, the current retention period being 3 years for monitoring records and 20 years for medical records. Drastic reductions are also being proposed for lead and toluene.

31-0004
ASBESTOS

Harwood, Colin F. and Blaszak, Thomas P.
CHARACTERIZATION AND CONTROL OF ASBESTOS EMISSIONS FROM OPEN SOURCES
IIT Research Inst. Contract EPA-68-02-1348. Final Rept., June 1973-May 1974 (September 1974), IITRI-C6290-11, EPA/650/2-74-090. PB-238 925/2GA.

The report reviews control technology applicable to asbestos emissions from open sources including asbestos mines, mills, and manufacturing waste piles. It combined a literature review with visits to asbestos mining and manufacturing operations, and considered climatology, location, and topography. The study, which included preliminary field sampling, produced a comprehensive bibliography on emissions control. The health effects of asbestos exposure were reviewed from two aspects: the significance of fiber size, and the effect of non-occupational exposure. Fiber size considered to be most harmful is still not established and, while non-occupational exposure probably does not lead to asbestosis, evidence relates it to increased incidence of cancer. Data analyses indicated that asbestos can be detected at considerable distances from a given source. It was concluded that, because of their proximity to populations, asbestos manufacturing waste piles are a threat to public health more serious than asbestos mining.

[Abstract In: Government Reports Announcements 75 (8): 145 (18 April 1975)

Igwe, Basil U.N.
ECONOMIC ANALYSIS OF EFFLUENT GUIDELINES FOR THE ASBESTOS INDUSTRY
Arthur D. Little, Inc. Contract EPA-68-01-1541. Final Rept. (December 1974), ADL-C-75934-04, EPA-230/2-74-001. PB-238 268/7GA

An analysis was made of the potential economic impact on the asbestos products manufacturing industry due to the implementation of the effluent limitations standards formulated in compliance with the 1972 Federal Water Pollution Control Act Amendments. The industry is not expected to suffer major adverse impacts under both standards as measured by loss of production, unfavorable price structure, employment curtailment, etc.

[Abstract in: Government Reports Announcements 75 (6): 126 (21 March 1975)]

ASBESTOS

See: 31-0001, Arsenic
See: 31-0002, Arsenic

Radding, Shirley B. et al
REVIEW OF THE ENVIRONMENTAL FATE OF SELECTED CHEMICALS
Stanford Res. Inst. Contract EPA-68-01-2681, Final Rept. on Task 1 (10 January 1975),
EPA/560/5-75-001, PB-238 908/8GA

A search of the scientific literature and an evaluation of such literature on the environmental fate of the following compounds has been reported: benzidine and its salts; 3,3'-dichlorobenzidine; 1-naphthylamine; propiolactone; 4,4'-methylenebis(2-chloroaniline); ethylenimine; and bis(chloromethyl)ether. Some intelligent guessing based on structural analogies for the chemicals is made where little information was available. These chemicals are known carcinogens but little is known of their environmental fate. Emphasis is placed on reporting or estimating kinetic values for potentially important pathways of degradation. In cases where no data were available, independent calculations for free radical reactivity were made.

[Abstract in: Government Reports Announcements 75 (8): 72 (18 April 1975)]

31-0007
BORON

Weeth, H.J. and Green, G.H.
AN ECOLOGICAL INVESTIGATION OF THE ACCURACY OF THE FEDERAL STANDARD OF PERMISSIBLE BORON LEVELS TO WATER RESOURCES
Nevada Univ., Center for Water Resources Research. Contract DI-14-31-0001-4028, W75-02889, OWRT-A-053-NEV (4) (October 1974), PB-238 298/4GA

The purpose was to determine if the Environmental Protection Agency's proposed maximum acceptable concentration of 5 mg/l boron in livestock water is realistic. Twelve Hereford heifers were tested in thirty-day periods. Total daily boron intakes were 215, 4224, and 7219 mg. with tap water, 150 mg/l boron-water and 300 mg/l boron-water treatments, respectively. Renal clearance and/or reabsorption estimates were made on creatinine, osmolites, free water, sodium, phosphate and boron. Effects of treatments on daily urine weight, total dissolved solids, osmotic pressure, sodium, potassium, phosphate and boron were also evaluated. The results showed that the cattle were able to tolerate the high concentration of boron with no permanent effects. The heifers did, however, lose weight, showed a tendency for erythematous swelling, and the concentrations of plasma phosphate were significantly reduced while plasma boron concentrations were higher. The study indicates that cattle can tolerate at least one order of magnitude more boron in their drinking water than the 5 mg/l limit set by the Environmental Protection Agency with no ill effects.

[Abstract in: Government Reports Announcements 75 (7): 8 (4 April 1975)]

See: 31-0006, Benzidine

See: 31-0006, Benzidine

31-0008
FLAME RETARDANTS

Anon
FR: GREAT LAKES
Am. Dyest. Rep. 64 (9): 69 (1975)

Great Lakes Chemical Corp's two new brominated acrylate monomers, 2,3-dibromopropyl acrylate and 2,3-dibromopropyl methacrylate (trade-named Great Lakes AE-59 and Great Lakes Me-56, respectively) are specially designed for flame retardant coatings and plastics. A variety of potential applications is claimed.

31-0009
FLAME RETARDANTS

Donaldson, D.J. et al
FLAME RETARDANT FOR 50/50 POLYESTER/COTTON WOVENS
Am. Dyest. Rep. 64 (9): 30 (1975)

From 1 Sept. 1976 through 1981, CPSC will add six flame-retardant standards for clothing made chiefly from 50/50 polyester/cotton blends. Recently, a tetrakis (hydroxymethyl)phosphonium chloride-urea-poly(vinyl bromide) (THPC-urea-PVB) proved to be an effective flame retardant for this blend except that it caused the fabric to turn yellow, when cured. To counteract this effect, a vinyl bromide/vinyl chloride (slightly more bromide than chloride) latex was formulated for incorporation into the THPC-urea-PVB emulsion. Reflectance tests indicate that the new THPC-urea-PVB-PVC formulation overcomes the discoloration problem while still maintaining its effective flame-retardancy properties.

Le Blanc, R. Bruce et al
NEW PHOSPHORAMIDE DERIVATIVES AS FLAME RETARDANTS FOR COTTONS
Text. Chem. Color. 7 (10): 172/23-174/25 (1975)

The most widely used flame retardants for cottons, Pyrovatex CP and tetrakis (hydroxymethyl)phosphonium salts (THP salts) are not effective for all end uses. To find an inexpensive finish providing cottons with flame retardance and durable press properties that could be maintained under various laundering conditions, tests were made with various phosphoramide derivatives, prepared by reacting tetramethylphosphorodiamidic chloride with ammonia and different amines and amides. The most satisfactory compound was pentamethylphosphorotriamide, which was less costly and an effective flame retardant, when methylolated and applied to cotton with triazine resins.

31-0011
FLUOROCARBONS

Anon
NBS RESEARCH DETAILS FLUOROCARBON BREAKDOWN IN UPPER ATMOSPHERE
J. Air Pollut. Control Assoc. 25 (10): 1060-1 (1975)

Drs. P.J. Ausloos and R.E. Rebbert of NBS made public at the recent ACS Chemical Society meeting in Chicago their studies on the breakdown of fluorocarbons by sunlight in the earth's upper atmosphere and the effects of temperature on this breakdown. Additional details of their research are presented here, but a fuller accounting will be published later in the "Journal of Photochemistry."

31-0012
FLUOROCARBONS

Huebner, Russell H. et al
ULTRAVIOLET PHOTOABSORPTION BY HALOCARBONS 11 AND 12 FROM ELECTRON IMPACT MEASUREMENTS
Nature 257 (5525): 376-8 (2 October 1975)

Electron energy-loss spectra were obtained for F-11 ($CFCl_3$) and F-12 (CF_2 Cl_2) using the NBS model AN-1 electron impact spectrometer. Energy absorption results relevant to the ozone depletion problem are presented. The data confirm the measurements of Rowland and Molina, but differ from other published data.

31-0013
FLUOROCARBONS

Ramanathan, V.
GREENHOUSE EFFECT DUE TO CHLOROFLUOROCARBONS: CLIMATIC IMPLICATIONS
Science 190 (4209): 50-2 (3 October 1975)

A new theory is presented describing the effects of chlorofluorocarbons on the earth's thermal energy balance. Chlorofluorocarbons (e.g., fluorocarbon propellants 11 and 12) and chlorocarbons have strong infrared bands capable of absorbing radiation from the earth's surface and emitting it at the lower atmospheric temperature, thus causing a reduction in the net infrared radiative flux emitted to space by the earth-atmosphere system. This "greenhouse" effect tends to increase surface and atmospheric temperatures. The theory which is postulated on a very simplified model of the atmosphere and considers only those bands in the 8 to 12 μm region, suggests an increase in mean global surface temperature of at least 0.9°K by the year 2000, if the concentrations of F-11 and F-12 are each increased to 2 ppb.

31-0014
FLUOROCARBONS

Marchio, J.L. and Quick, Q.
ODOR PROBLEMS WITH PROPELLANT BLENDS
Soap, Cosmet. Chem. Spec. 51 (9): 64-6, 89-90 (1975)

An analytical study to determine the cause of an unpleasant odor reported in an aerosol propellant containing blends of fluorocarbons 11 and 12 inhibited with nitromethane is reported. The malodor is produced only when nitromethane, iron, water and HCl are present. The breakdown of the fluorocarbon, during corrosion, is one possible source of HCl. The odiferous compounds were identified primarily as oximes.

31-0015
FLUOROCARBONS

Lemmer, Francis S. and Allen, Sylvester T.
FIRE EXTINGUISHING PROPERTIES OF CHLORODIFLUOROMETHANE
Army Tank-Automotive Command, Warren, Mich. Tech. Rept.TACOM-TR-11926 (June 1974),
AD/A-003 993/3GA

The fire extinguishing properties of chlorodifluoromethane were measured by using a propane gas burner fed with oxygen enriched air. The bench test employed controlled burner temperature, air and fuel pressure. Time to extinguish and quantity of chlorodifluoromethane used were the principal criteria for establishing extinguishing properties. Chlorodifluoromethane proved to be equal to another popular halogenated hydrocarbon, monobromotrifluoromethane.

[Abstract in: Government Reports Announcements 75 (6): 139 (21 March 1975)]

31-0016
FLUOROCARBONS

Anon
A MATHEMATICAL COMPUTER MODEL SIMULATING THE OZONE REGION
Chem. Eng. News 53 (4): 16 (6 October 1975)

University of Wisconsin meteorologists will use a computer model simulating the stratospheric ozone region to study such effects of nitrous oxide and chlorofluorocarbons as the impact of reflected and scattered sunlight on ozone-layer chemistry. The model makes it possible to follow the night/day changes in chemical concentrations.

31-0017
FLUOROCARBONS

Anon
OZONE CONTROVERSY CASTS GLOBAL SHADOW
Chem. Week 117 (16): 47-8 (15 October 1975)

The ozone controversy dominated the recent 10th annual International Aerosol Conference in London. The European aerosol market has had slow sales and a lack of new products. Heard at the meeting: The World Meteorological Organization reports that a 2% ozone-depletion by chlorofluorocarbons has increased UV radiation at the ground level and this increase will reach 40%, at an unspecified time. Possible propellant alternatives to F-11 and F-12 are F-21 (dichlorofluoromethane), F-22 (chlorodifluoromethane) and methylene chloride. F-22, already a production item, is reputedly less toxic than F-11 and F-12, but the toxicity of F-21 is not yet well established. On the other hand, F-21 and F-22 were mentioned by R.J. Cicerone as possible candidates for regulation, when he asked the Senate Subcommittee on the Upper Atmosphere to recommend regulation of F-11, F-12, F-113, and F-114.

31-0018
FLUOROCARBONS

Anon
RESEARCH CONTINUES ON STRATOSPHERIC MODIFICATION BY FREON DECOMPOSITION: DETAILS OF THE MECHANISM ARE REPORTED
Res./Dev. 26 (10): 8 (1975)

The Manufacturing Chemists Association has added 7 new contracts for research on the effects of fluorocarbons on the Earth's atmosphere. Ten other studies are already underway in this $1.1-million program, which is expected to total about $5-million over a 3-year period.

Anon
STATE AEROSOL ACTIONS
Soap, Cosmet. Chem. Spec. 51 (9): 20 (1975)

New York and Louisiana have enacted legislation to restrict the sale of chlorofluorocarbon compounds, calling for special labels and imposing other regulations. California wants the President and Congress to make ingredient and percentage composition labeling mandatory. Massachusetts, Michigan, New Jersey, Ohio, and Pennsylvania are also proposing bills to control or ban the sale of aerosol products.

See: 31-0006, Benzidine

Lissner, Reinhard et al
HEXACHLOROBENZENE-INDUCED PORPHYRIA IN RATS -- RELATIONSHIP BETWEEN PORPHYRIN EXCRETION AND INDUCTION OF DRUG METABOLIZING LIVER ENZYMES
Biochem. Pharmacol. 24 (18): 1729-31 (15 September 1975)

Urinary excretions of the porphyrins and 5-aminolaevulinic acid (ALA) by rats were found to be abnormal after the 40th day of feeding on diets containing HCB. Cytochrome P-450 content in the liver was elevated during the first week, then stayed constant until the 30th day before rising again. Aniline hydroxylase activity followed a similar pattern. It is suggested that a metabolite is probably formed from the oxidation of HCB and that this metabolite may be the actual porphyrogenic agent.

Gormley, William T.
DISTRIBUTION CHARACTERISTICS OF METHYLHYDRAZINE IN THE PLASMA AND CEREBROSPINAL FLUID OF MONKEYS
Aerospace Med. Res. Lab., WPAFB, Ohio. Rept. No. AMRL-TR-74-39 (1974),
AD/A-005 529/3GA [Also in: Aviation, Space and Environ. Med. 46 (1): 64-8 (1975)]

A lumped parameter mathematical model including extracellular fluid, intracellular fluid, and cerebrospinal fluid compartments has been applied to describe methylhydrazine (MMH) distribution kinetics in the blood and cerebrospinal fluid of Rhesus monkeys. Ten monkeys, average weight 5.5 kg, were given intravenous infusions of MMH while blood and cerebrospinal fluid samples were periodically collected and analyzed for MMH. The mathematical model was used to simulate the infusions and the simulations were compared with experimental data to validate the model and to evaluate the mass transfer parameters required by the model

[Abstract in: Government Reports Announcements 75 (8): 66 (18 April 1975)]

31-0022
LIQUEFACTION AND GASIFICATION OF COAL

Ayer, Franklin A.
SYMPOSIUM PROCEEDINGS: ENVIRONMENTAL ASPECTS OF FUEL CONVERSION TECHNOLOGY (MAY 1974, ST. LOUIS, MISSOURI)
Research Triangle Inst. Contract EPA-68-02-1325. Final Rept. (Oct. 1974), EPA/650/2-74-118

This document is the final report covering EPA's symposium to review and discuss environmentally related information of coal conversion technology. More specifically, papers were presented that covered environmental quality and standards, fuel contaminants, environmental aspects of specific fuel conversion systems, fuel utilization and total environmental assessment, and research and development needs.

[Abstract in: Government Reports Announcements 75 (8): 139-40 (18 April 1975)]

31-0023
LIQUEFACTION AND GASIFICATION OF COAL

Downs, W. Richard and Cox, Kenneth E.
COAL CONVERSION AND USAGE: A SYSTEMS STUDY
NASA-TM-X-58157; JSC-09260 (November 1974)

A comprehensive study of coal conversion and usage is presented, with emphasis on its possibilities as an interim energy source between the phaseout of petroleum and natural gas and the wide use of solar energy. Several projections of energy demands into the 21st century are included. Possibilities for the use of coal both for conversion into a variety of gas and solid fuels and for firing electric powerplants are analyzed and costs of coal-based energy, based on current technology, are discussed. A few specific methods of conversion are recommended for further research and development. Some ways to overcome environmental problems both in mining and in burning coal are also mentioned.

[Abstract in: STAR 13 (3): 317 (8 February 1975)

See 31-0006, Benzidine

See: 31-0006, Benzidine

Anon
ETHYL WILL DISCONTINUE TRICHLOROETHANE PRODUCTION
Chem. Week 117 (16): 15 (15 October 1975)

After 1 April 1976, when current production amounts and inventories are expected to be exhausted, Ethyl will be out of the 1,1,1-trichloroethane business. The company has not decided on the final disposition of its 50-million-lbs/year unit at Baton Rouge, La. Production and marketing of perchloroethylene and trichloroethylene will continue.

31-0025
PHTHALATES

Daniel, J.W. and Bratt, H.
THE ABSORPTION, METABOLISM AND TISSUE DISTRIBUTION OF DI(2-ETHYLHEXYL) PHTHALATE IN RATS
Toxicology 2: 51 (1974)

After a single oral dose of carbon-labelled DEHP (2.0 mg/kg), rats excreted 42% of the radioactivity in the urine and 57% in the feces within 7 days; about 14% was excreted via the bile. Rats given a dose of radioactive DEHP, excreted 57% of the radioactivity in the urine, 38% in the feces, and 9% in the bile. On a 35-day diet of 1000 ppm of carbon-labelled DEHP, radioactivity in the liver reached the equivalent of 40-50 ppm DEHP in about one week: the level in abdominal fat reached 7-9 ppm within 2 weeks. Tests were also made at the 5000 ppm diet level. The action of carbon-labelled DEHP, given intravenously, was followed in the blood, liver, lungs, and in the excretion products of the rats.

[Abstract in: Food Cosmet. Toxicol. 13 (3): 398-9 (June 1975)]

31-0026
PHTHALATES

Stein, M.S. et al
INFLUENCE OF DIETARY FAT AND DI-2-ETHYLHEXYL PHTHALATE ON TISSUE LIPIDS IN RATS
J. Nutr. 104: 187 (1974)

Rats were fed a fat-free diet plus either 0.1% DEHP or 4% stripped lard, or both, for 44 days. The DEHP increased liver weight by itself and in combination with lard. DEHP enhanced the growth-promoting effect of the lard, judging from body-weight gain. Given alone, DEHP caused an insignificant reduction in total body weight gain. DEHP accumulated in the heart and epididymal fat pad, but not in the liver. In combination with lard, DEHP increased the total lipid content of the liver. Evidently, dietary DEHP has an influence on lipid metabolism.

[Abstract in: Food Cosmet. Toxicol. 13 (3): 398-9 (June 1975)]

Osawa, Zenjiro et al
STUDY OF THE DEGRADATION OF POLYURETHANES. II. ESR STUDY ON THE PHOTODECOMPOSITION OF POLYURETHANES AND ETHYLPHENYLCARBAMATE
J. Polym. Sci., Lett. Ed. 13 (9): 535-42 (1975)

The photodecomposition mechanism of polyurethanes and a model urethane system (ethylphenylcarbamate) on the basis of the ESR and mass spectral data are described. The main gaseous products are carbon dioxide and carbon monoxide. Degradation occurs through cleavage of the N-C and C-O bonds in the urethane group.

See: 31-0006, Benzidine

See: 31-0024, Perchloroethylene

31-0028
VINYL CHLORIDE

Anon
WANTED: SUBSTITUTES FOR PVC
Chem. Week 117 (15): 47-8 (8 October 1975)

The Packaging Institute recently sponsored a seminar on replacement materials for polyvinyl chloride. Producers were cautioned by Dr. Seymour Gilbert, Rutgers University, Dept. of Food Science, that various substitute materials such as co-polyesters, acrylic-based polymers and nitrile resins may have to handle problems as to monomer migration, like those encountered with PVC. The FDA may have established fixed rules on monomer migration within a year. Bruce Kemp of the plastics dept of ICI, United States, predicted that 40% of the market for vinyl packaging materials will go to substitute materials.

31-0029
VINYL CHLORIDE

Anon
PVC PULL-OUT PLANNED
Chem. Week 117 (15): 25 (8 October 1975)

Uniroyal Chemical is tentatively phasing out production of its 130-million lbs/year polyvinyl chloride resin at its Painesville, Ohio, plant. The company states that exceedingly large capital expenditures would be needed to meet OSHA standards and EPA emission rules. Two hundred and fifty workers will be affected by the shutdown. A jointly-owned operation with Borden Chemical will continue to produce vinyl chloride monomer in Louisiana.

31-0030
VINYL CHLORIDE

Anon
WHAT PPG KNOWS ABOUT VINYL CHLORIDE MONOMER WOULD FILL A BOOK...SO WE DID!
Chem. Week 117 (15): 38 (8 October 1975)

A new book published by PPG Industries describes their most current procedures for vinyl chloride monomer production, covering properties, hazards, handling, storage, analysis, and other areas.

31-0031
VINYL CHLORIDE

McCann, Joyce et al
MUTAGENICITY OF CHLOROACETALDEHYDE, A POSSIBLE METABOLIC PRODUCT OF 1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE), CHLOROETHANOL (ETHYLENE CHLOROHYDRIN), VINYL CHLORIDE, AND CYCLOPHOSPHAMIDE
Proc. Nat. Acad. Sci. USA 72 (8): 3190-3 (1975)

Chloroacetaldehyde, a possible metabolite of vinyl chloride and other industrial chemicals, was shown to be mutagenic in a sensitive bacterial test. Chloroacetaldehye was, in fact, hundreds of times more mutagenic to one bacterial strain than was vinyl chloride itself, and may be the active carcinogenic form of vinyl chloride. If it is also the active carcinogenic form of dichloroethane and chloroethanol, as well as vinyl chloride, then chloroacetaldehyde may also cause angiosarcoma in workers exposed to dichloroethane or chloroethanol.

Anon
WHAT CLEAN-AIR RULES WILL COST THE CPI
Chem. Week 117 (16): 37 (15 October 1975)

The financial impact of clean-air regulations and standards on the chemical industry over the next 15 years is discussed briefly. Capital investments of about $350 million and operating costs of $95 million/year are estimated, on the basis of multiplying an estimated 5,536 stacks by an estimate of the cost of instrumentation for each stack. Additional personnel required for implementing the programs would be a major cost item. The use of a Hewlett-Packard monitoring system at Georgia Pacific's vinyl chloride plant at Plaquemine, La., is described as being satisfactory for meeting OSHA's health standards.

VINYL CHLORIDE

See: 31-0009, Flame Retardants

31-0033
GENERAL INFORMATION

Anon
EPA BANS ANT POISON FIRM
Soap, Cosmet. Chem. Spec. 51 (9): 20 (1975)

Life Science Products Co., Hopewell, Va., has been ordered by EPA to cease manufacture of Kepone, the fire ant poison. Under investigation by EPA and OSHA since the ketone was found in the blood of some employees, the company has now been charged with violation of the law by EPA and faces $16,500 in fines by OSHA. Nine employees are hospitalized with encephalopathy, which is a form of brain damage.

If the company follows EPA shipping regulations, it will be allowed to ship existing inventories to its one customer, Allied Chemical's Baltimore plant. Life Science Products Co. is reportedly contesting the federal citations.

31-0034
GENERAL INFORMATION

Anon
WORKER EXPOSURE TO CHROMATE PIGMENTS CAN LEAD TO "UNUSUALLY" HIGH CANCER RISKS
Chem. Eng. News 53 (41): 8 (13 October 1975)

Reporting to NIOSH on the preliminary results of an epidemiological study, the final results of which should be ready by the end of 1975, the Dry Color Manufacturers' Association states that 29% of the 38 deaths occurring among 580 workers exposed to chromate pigments were caused by lung cancer. In contrast, a 7% lung cancer death rate has been found among lead smelter workers.

31-0035
GENERAL INFORMATION

Anon
CHROMATE PIGMENTS MAY BE GREATER LUNG-CANCER THREAT THAN SUSPECTED
Chem. Week 117 (16): 25 (15 October 1975)

Working with data submitted by the Dry Color Manufacturers' Association, NIOSH's Office of Occupational Health Surveillance and Biometrics reports that 85% of all cancer deaths among workers exposed to chromate pigments are from lung cancers, a higher percentage than anticipated.

31-0036
GENERAL INFORMATION

Bidleman, T.F. and Olney, C.E.
LONG RANGE TRANSPORT OF TOXAPHENE INSECTICIDE IN THE ATMOSPHERE OF THE WESTERN NORTH ATLANTIC
Nature 257 (5526): 475-7 (9 October 1975)

Toxaphene, the most widely used U.S. pesticide during the last decade, probably contains about 200 polychlorinated camphenes, although the exact composition of the pesticide is not known. Toxaphene residues may persist in soils for years, but there is some volatilization. Although toxaphene has been found in air samples in just three southern agricultural areas, this report shows that the pesticide has been identified in air samples over Bermuda. Apparently, most of the toxaphene in the air did not originate from Bermuda but was transported through the atmosphere, traveling long distances.

31-0037
GENERAL INFORMATION

Porter, John A.H.
ACUTE RESPIRATORY DISTRESS FOLLOWING FORMALIN INHALATION (Letter to Editor)
Lancet 2 (7935): 603-4 (27 September 1975)

A case of acute pneumonitis in a neurology resident may have been caused by heavy exposure to formaldehyde vapors, arising from the use of formalin, a 40% solution of formaldehyde.

31-0038
GENERAL INFORMATION

Hill, Richard N. et al
GENETIC CONTROL OF CHLOROFORM TOXICITY IN MICE
Science 190 (4210): 159-61 (10 October 1975)

Different strains of mice were given chloroform in peanut oil to study its lethal effects. The LD$_{50}$ dose for the C57BL/6J strain was a 0.33 ml/kg versus 0.08 ml/kg for the DBA/2J strain, indicating that the C57BL/6J strain had about four times the resistance to the lethal effects than the other strain. The kidneys of the DBA/2J animals contained more than twice the amount of chloroform than did those of the more resistant animals. Significant strain differences were noted in chloroform accumulation in first generation offspring, the offspring values being midway between the parental values.

See: 31-0018, Fluorocarbons

32-0001
ARSENIC

Anderson, A.C. et al
THE ACUTE TOXICITY OF MSMA TO BLACK BASS (*MICROPTERUS DOLOMIEU)*, CRAYFISH, *(PROCAMBARUA SP.)* AND CHANNEL CATFISH (*ICTALURUS LACUSTRIS)*
Bull. Environ. Contam. Toxicol. 14 (3): 330-3 (1975)

Because of the possibility that residues of the grass control herbicide, monosodium salt methanearsonic acid (MSMA) will build up in waterways near highways, when MSMA is used to control Johnson grass, static bioassays were run to determine the acute toxicity of the compound in black bass, crayfish, and channel catfish. Median Lethal Threshold (TLM) determined at 48 hrs were 1660 mg/l, 5100 mg/l, and 4700 mg/l, and at 96 hrs were 900 mg/l, 1100 mg/l, and 3050 mg/l, for black bass, crayfish, and channel catfish, respectively. Thus, even the black bass, the most sensitive of these three species, can tolerate fairly high levels of MSMA. However, the tests did not provide any data on the possible concentration of MSMA by the fish nor indicate changes in toxicity that might be expected under actual environmental stress. No information is available on the toxicity of possible degradation products of MSMA.

32-0002
ARSENIC

King, H.G. and Morrow, R.W.
DETERMINATION OF ARSENIC AND SELENIUM IN SURFACE WATER BY ATOMIC ABSORPTION TO SUPPORT ENVIRONMENTAL MONITORING PROGRAMS
Oak Ridge Y-12 Plant, Tenn. Contract W-7405-eng-26. Report Y-1956 (4 November 1974)

A method was developed for determining arsenic and selenium in surface water by atomic absorption. The two elements are hydrided in acidified water by sodium borohydride to form arsine and selenine gases, which are then passed into a low-temperature argon/air/hydrogen flame for the atomic absorption measurement. A background correction is made by adjusting the gas flow rates. The limit of detection is 5 µg/l for arsenic and 1 µg/l for selenium. The method is both fast and economical.

[Abstract in: Nuclear Sci. Abstracts 31 (3): 803 (15 February 1975)

32-0003
ASBESTOS

Anon
EVEN IF RESIN IS PLENTIFUL, FILLERS WILL PLAY A BIG ROLE
Mod. Plast. 52 (10): 59-61 (1975)

In the plastics area one result of materials shortages is the increasing use of fillers. It is estimated that the 1.06 million tons of fillers consumed in 1975 will increase to 2.5 million by 1980, to 6.9 million by 1990, and to 15 million tons by 2000. Fillers of the future are expected to provide plastics with new performance characteristics in addition to serving as extenders, an added value seen possible from the advent of coupling agents and micropacking.

Because of the new dust-free pellets developed by Union Carbide, asbestos is expected to show great gains in the filler market. The 180,000 tons of asbestos that may be used for this purpose in 1975 is estimated to grow to 800,000 tons by 1980 and 1.7 million tons by the year 2000.

32-0004
ASBESTOS

Hefner, Robert E., Jr. and Gehring, Perry J.
A COMPARISON OF THE RELATIVE RATES OF HEMOLYSIS INDUCED BY VARIOUS FIBROGENIC AND NON-FIBROGENIC PARTICLES WITH WASHED RAT ERYTHROCYTES IN VITRO
Am. Ind. Hyg. Assoc., J. 36 (10): 734-40 (1975)

Confirmation of an existing relationship between fibrogenicity and hemolytic activity for various particulates is reported from these *in vitro* tests with rat erythrocytes, using Min-U-Sil Filler Silica, Hooker #1 Chrysotile Asbestos, and nine other materials.

A significant hemolysis of erythrocytes, following apparent first order kinetics, was produced by the silica of a 5 μ number length mean diameter. Asbestos of the same number length mean diameter produced a comparable or even greater rate of hemolysis.

32-0005
ASBESTOS

Anon
BACKGROUND INFORMATION ON NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS - PROPOSED AMENDMENTS TO STANDARDS FOR ASBESTOS AND MERCURY
EPA, Research Triangle Park, N.C., Office of Air Quality Planning and Standards, EPA-450/2-74-009a (Oct. 1974). PB-237 169/8GA

Rationale for amendments promulgated April 6, 1973, and an evaluation of their economic and environmental impacts are presented. Report covers asbestos pollution related to manufacturing, demolition and renovation, fabrication and disposal of wastes and mercury emissions from sludge incineration and drying facilities. Optional air cleaning methods for compliance with asbestos standards, chemical stabilization of waste disposal sites, and estimation of allowable mercury emissions from sewage sludge incineration facilities are discussed.

[Abstract in: Government Reports Announcements 75 (1): 109 (10 January 1975)]

32-0006
ASBESTOS

Carton, Robert J.
DEVELOPMENT DOCUMENT FOR EFFLUENT LIMITATIONS GUIDELINES AND NEW SOURCE PERFORMANCE STANDARDS FOR THE BUILDING, CONSTRUCTION, AND PAPER SEGMENT OF THE ASBESTOS MANUFACTURING POINT SOURCE CATEGORY
EPA, Wash., D.C., Effluent Guidelines Div. EPA/440/1-74-017a (February 1974)
PB-238 320/6GA

This document presents the findings of an extensive study of a segment of the asbestos manufacturing industry for the purpose of developing effluent limitations guidelines and Federal standards of performance for the industry. The development of data and recommendations in the document relate to a portion of the asbestos manufacturing category which contains the major water users in this industry. Subcategories include asbestos-cement pipe, asbestos-cement sheet, asbestos paper (with starch and elastomeric binders), asbestos millboard, asbestos roofing products, and asbestos tile. Manufacturing processes, wastes, control technologies, and costs are discussed.

[Abstract in: Government Reports Announcements 75 (7): 116 (4 April 1975)]

See also: 32-0036, General Information

Pliss, Gennady B. and Khudoley, V.V.
TUMOR INDUCTION BY CARCINOGENIC AGENTS IN AQUARIUM FISH
J. Nat. Cancer Inst. 55 (1): 129-36 (July 1975)

Guppies and zebra fish were exposed (via feeding, skin application, ip injections, and other methods) to nine chemicals known to be carcinogenic to man. Although five of these chemicals, including two nitrosamines, produced liver tumors in some of the fish, benzidine and three other chemicals did not induce any tumors. Benzidine is converted biochemically in the liver but it is not significantly hepatotropic. The experiment indicates that fish are suitable models for testing the carcinogenic activity of chemicals and for the measurement of water pollution.

32-0008
HEXACHLOROBENZENE

Crist, Howard L. et al
RAPID DETERMINATION AND CONFIRMATION OF LOW LEVELS OF HEXACHLOROBENZENE IN ADIPOSE TISSUES
Bull. Environ. Contam. Toxicol. 14 (3): 273-81 (1975)

A rapid, simple, but sensitive and reliable method is described for the detection and confirmation of HCB in lipid material at levels as low as 5ppb. Hexane and a Florisil column were used to separate HCB from the coextractives in chicken fat. A Tracor, MT-220 gas chromatograph with a tritium electron capture detector was used.

32-0009
HEXACHLOROBENZENE

Villeneuve, D.C. and Newsome, W.H.
TOXICITY AND TISSUE LEVELS IN THE RAT AND GUINEA PIG FOLLOWING ACUTE HEXACHLOROBENZENE ADMINISTRATION
Bull. Environ. Contam. Toxicol. 14 (3): 297-300 (1975)

Rats and guinea pigs were dosed daily (p.o.) with HCB in corn oil for 16 days at 500 mg/kg body weight. All the guinea pigs (7 each, male and female) died during dosing. Eight of 11 male rats, and 5 of 11 female rats died also. Analysis of residue levels in brain and liver tissues showed a much greater accumulation, however, in the rats than in the guinea pigs. Rats also showed a lower body weight loss.

Morita, M. and Oishi, S.
CLEARANCE AND TISSUE DISTRIBUTION OF HEXACHLOROBENZENE IN RATS
Bull. Environ. Contam. Toxicol. 14 (3): 313-8 (1975)

In this 56-day study of the distribution and clearance rate of HCB in rats, HCB was concentrated mainly in the fat and to a lesser degree in the brain, heart, lungs, liver, kidneys, and testes. Fat content was 18.76 ± 1.54 μg/g (on wet basis) compared to testes content of 0.21 ± 0.05 μg/g. In most organs, maximum concentration was reached within 6 or 12 hours, decreasing rapidly thereafter.

Germaise, Annie B-K. et al
IMMUNOLOGIC ASPECTS OF 1,2-DIMETHYLHYDRAZINE-INDUCED COLON TUMORS IN RATS
J. Nat. Cancer Inst. 54 (5): 1231-5 (1975)

1,2-Dimethylhydrazine (DMH) is known to produce colon tumors in the rat. Two experiments were conducted to determine if DMH-induced tumors contain specific antigens or if there is a histological difference in cellular response, when rats are fed a lipotrope-deficient diet instead of an adequate diet. In one experiment 12-week old rats received intragastrically 10 doses of 30 ml/kg/wk of DMH dissolved in 0.9% NaCl or 1 ml/week of NaCl. In another experiment, 7-week old rats, fed diet 1 or 2, received intragastrically 30 mg/kg/wk of DMH, for 5 or 10 doses.

Results indicated that an antigen in an extract of colon tumors, not found in normal colon, was related to antigens in rat fetuses. No immunological cross-reactions with carcinoembryonic antigen were noted. There was a significant spatial relationship between mucinous adenocarcinomas of the colon and lymphoid follicles.

32-0012
ISOCYANATES

Anon
NEW CONTENDER FOR PLASTICS PARTS MARKETS
Chem. Week 117 (15): 40 (8 October 1975)

The isocyanate used in Dow's new Instant Set Polymer (See: CATS 30-0021) has not been identified by the company but, according to U.S. Patent 3,726,827 (1973), it is derived from reacting a diisocyanate, e.g., toluene diisocyanate, with a smaller amount of polyol. Polyol preparation and related process steps are described briefly.

Dow has issued two licenses for its ISP, a rigid urethane engineering plastic, to Micromet in Houston and to Jones & Vining in Salem, Mass., and anticipates that ISP will find a big market as a replacement for metals, ceramics, and wood.

32-0013
ISOCYANATES
(Market)

Anon
UPJOHN SEES BIG MARKET FOR URETHANE IN MIDEAST
Chem. Week 117 (17):63 (22 October 1975)

According to Keith Edmondson, Upjohn Chemical Division, consumption of urethane in the Mideast and Africa will increase by 20-22%/year through 1984, rising from the current 750,000 metric tons to 1.78 million metric tons in 1984. For the same period, the worldwide increase in urethane consumption is estimated at 12-14%/year; current worldwide consumption of 680,000 metric tons of isocyanates should reach 1.7 million metric tons by 1984.

32-0014
ISOCYANATES
(Production)

Anon
THREE HUNDRED MILLION LBS.
Chem. Eng. News 53 (43): 12 (27 October 1975)

In an advertisement, Upjohn Polymer Chemicals reports that its constantly expanding La Porte, Texas, facility and its European and Japanese facilities now provide the company with an annual capacity of 300 million lbs of isocyanates, useful for a variety of urethane products.

Anon
AND NEXT WEEK ERDA WILL DEDICATE A PILOT PLANT TO CONVERT COAL. . .
Chem. Eng. News 53 (43): 18 (27 October 1975)

C.E. Lummus Co. will operate the $15 million Bruceton, Pa. pilot plant in which 72 tons/day of sulfur-rich Appalachian coal or western coal will be converted by Bu Mines Synthane process to raw synthesis gas. The gas, in turn, will be cleaned and methanated to yield 1.2 million cu ft of pipeline-quality methane.

LIQUEFACTION AND GASIFICATION OF COAL

See also: 32-0037, General Information

32-0016
NITRILOTRIACETIC ACID

Shannon, Earl E.
EFFECTS OF DETERGENT FORMULATION ON WASTEWATER CHARACTERISTICS AND TREATMENT
J. Water Pollut. Control Fed. 47 (10): 2371-83 (1975)

As part of continuing studies on the effects of detergent builders on domestic wastewater characteristics and wastewater treatment processes, the Wastewater Technology Centre of the Environmental Protection Service, Burlington, Ont., Canada, replaced all laundry detergents with nitrilotriacetic acid (NTA), carbonate, phosphate-, and citrate-based products.

NTA substitutions reduced total phosphorus loadings below baseline by 25.8%; carbonate substitutions reduced them by 22-3%. NTA degradation during the study was 60 to 75%; citrate degradation was more than 95%. The NTA-mercury, -cadmium, and -nickel complexes showed poor degradability when applied to the laboratory activated sludge system.

32-0017
POLYURETHANES

Anon
FAKE LEATHER IS A REAL SUCCESS
Chem. Week 117 (17): 59-60 (22 October 1975)

Aerfab, Huntington Station, New York, a small ($2-3 million in sales for 1975) manufacturer of urethane-coated fabrics (simulated leather and suede fabrics) uses an undisclosed method of coating urethane onto a variety of backing fabrics. The company has successfully stayed in a business that many major manufacturers had to give up. The breathability and finished-product stability of urethanes apparently make them superior to vinyls and they may be substituted eventually for vinyl fabrics in autos. Other advantages of urethane fabrics include: no plasticizer migration, more resistance to abrasion, better washable and dry-cleanable results. Current main uses are clothing and homefurnishings.

POLYURETHANES

See: 32-0012, Isocyanates
32-0013, Isocyanates
32-0014, Isocyanates

Anon
OSHA PLANS RULES FOR TWO MORE CHEMICALS
Chem. Eng. News 53 (42): 7 (20 October 1975)

Proposed new OSHA occupational exposure standards for beryllium and trichloroethylene were prompted by animal studies that indicated the potential carcinogenicity of the chemicals. At this time, however, OSHA's preliminary data on trichloroethylene are not such that OSHA can tag the solvent with the capability of causing cancer in humans, but inhalation tests showed that beryllium induced lung tumors in rats and lung cancers in monkeys. Also, beryllium given intravenously to rabbits caused bone tumors. OSHA, therefore, has labeled beryllium as a potential human carcinogen.

32-0019
VINYL CHLORIDE

Brand, K. Gerhard et al
BRIEF COMMUNICATION: FOREIGN-BODY TUMORIGENESIS BY VINYL CHLORIDE VINYL ACETATE COPOLYMER: NO EVIDENCE FOR CHEMICAL COCARCINOGENESIS
J. Nat. Cancer Inst. 54 (5): 1259-62 (1975)

In this study the tumors caused in mice by implants of vinyl chloride vinyl acetate copolymer (VCA) were attributed to the presence of a foreign body only. There was no evidence of a cocarcinogenic effect from the vinyl chloride monomer.

32-0020
VINYL CHLORIDE

Spirtas, Robert et al
THE ASSOCIATION OF VINYL CHLORIDE EXPOSURES WITH MORBIDITY SYMPTOMS
Am. Ind. Hyg. Assoc., J. 36 (10): 779-89 (1975)

The results of a 1974 mail questionnaire survey of VC polymerization workers are reviewed. The survey sought information on the frequency of eight symptoms, four of which were related to central nervous system disturbances; two to peripheral neurovascular and neuromuscular disturbances; one to local irritation of eyes, nose, throat; and one to generalized asthenia, or "run-down" feeling. In summary, the results show a clear VC dose-response relationship for dizzyness, nausea, headache, "pins and needles" in arms and legs, and general "run-down" feeling. The dose-response pattern was not statistically significant for passing out, or for local irritation of eyes, nose, or throat. Muscle weakness did not exhibit a dose-response relationship.

32-0021
VINYL CHLORIDE
(Production)

Anon
VINYL CHLORIDE
Chem. Eng. News 53 (43): 11 (27 October 1975)

Diamond Shamrock is contemplating building a plant for the production of vinyl chloride monomer, which it uses (but does not now make) to produce polyvinyl chloride.

32-0022
VINYL CHLORIDE

Carpenter, Ben H.
VINYL CHLORIDE. AN ASSESSMENT OF EMISSIONS CONTROL TECHNIQUES AND COSTS
Research Triangle Inst., Durham, N.C. Contract EPA-68-02-1325. Final Rep.
June-August 1974 (September 1974). EPA/650/2-74-097. PB-237 343/9GA

The report gives results of a survey of conceptual techniques applicable to vinyl chloride monomer (VCM) emission reduction with respect to VC monomer and polymer production. VCM emission points have been identified and quantified for four types of monomer plants--hydrochlorination of acetylene, chlorination/oxychlorination of ethylene (with oxygen) and dehydrochlorination, and direct chlorination of ethylene and dehydrochlorination--and four types of polymer manufacture--suspension polymerization, emulsion polymerization, bulk polymerization, and solution polymerization. Levels of control acievable and estimated cost of listed control techniques are presented.

[Abstract in: Government Reports Announcements 75 (1): 50 (10 January 1975)]

32-0023
VINYL CHLORIDE

Cox, R.A. et al
PHOTOCHEMICAL REACTIVITY OF VINYL CHLORIDE
UKAEA Res. Group, Harwell. Atomic Energy Res. Establishment. AERE-R-7820.
September 1974 (Available from NTIS)

The reactivity of vinyl chloride in the photochemical smog system was measured by two methods. In the first its reactivity has been compared with that of ethylene, propylene, and trans-2-butene when irradiated in air with simulated sunlight in the presence of nitric oxide. In the second its rate of reaction with hydroxyl radicals has been measured using OH produced by photolysis of nitrous acid. Vinyl chloride is only moderately reactive being similar to or slightly less reactive than ethylene but more reactive than normal paraffins.

[Abstract in: Nuclear Sci. Abstracts 31 (3): 805 (15 February 1975)]

32-0024
VINYL CHLORIDE

Anon
A SINGLE POLYVINYL-CHLORIDE PLANT. . .
Wall Street Journal, Wednesday (29 October 1975) p.1

Nine deaths from angiosarcoma have occurred among workers in a PVC plant in Shawinigan, Quebec. The plant, owned by a B.F. Goodrich Co. subsidiary, reportedly has taken steps to reduce employee exposure to vinyl chloride.

32-0025
VINYL CHLORIDE

Anon
HANDLING PVC POWDERS SAFELY
European Plastics News 2 (9): 4 (1975)

Recent studies indicate that fine PVC dust can lower the lower explosive limit of vinyl chloride/air mixtures thus raising the possibility of explosions when the contents of polymer tankers are being transferred to silos. It is recommended that tankers, hoses, and bulk storage systems be earthed.

Potentially ignitable levels of vinyl chloride monomer may also occur during the operation of high speed mixing equipment. Safe operating procedures are outlined in "Vinyl Chloride Monomer: Guide to the High Speed Mixing of PVC Resins and Compounds," a booklet published by the British Plastics Federation and the Chemical Industries Association.

32-0026
VINYL CHLORIDE

Haley, Thomas J.
VINYL CHLORIDE: HOW MANY UNKNOWN PROBLEMS?
J. Toxicol. Environ. Health 1 (1): 47-73 (1975)

This comprehensive review of the literature on vinyl chloride covers its synthesis and physical properties, analysis, biotransformation; discusses industrial hygiene aspects, the use and effects of aerosols; reviews animal and human toxicology, and animal and human carcinogenesis. Although VC induces cancer in man, the conditions for this induction are not yet related to ambient exposure levels. It is recommended that epidemiological surveys be continued in an effort to determine the latent period of exposure and degree of exposure required for angiosarcoma development; that animal experiments be undertaken on the effects of short exposures at high concentrations and long exposures at low concentrations; and that more rapid diagnostic and therapeutic measures be sought.

32-0027
GENERAL INFORMATION

Exon, J.H. and Koller, L.D.
EFFECTS OF FEEDING MANGANESE ANTIKNOCK GASOLINE ADDITIVE EXHAUST RESIDUES (Mn_3O_4) IN RATS
Bull. Environ. Contam. Toxicol. 14 (3): 370-3 (1975)

To determine the toxicity of methylcyclopentadienyl manganese tricarbonyl (MMT), rats were fed diets containing varying amounts of hausmanite (manganous manganic oxide) (Mn_3O_4), the major residue produced when MMT is heated as it would be when it is used as an antiknock additive in unleaded gasoline. Concentrations in the feed ranging from 200 to 200,000 ppm proved to be only slightly toxic to the rats. Growth rates indicated no clinical signs of manganese toxicity, and no gross pathological changes were noted at necropsy. No significant lesions were noted in the the histopathological examination of selected organs and tissues. It is concluded that Mn_3O_4 need not be extensively investigated as an acutely hazardous environmental contaminant.

32-0028
GENERAL INFORMATION

Ottolenghi, A.D. et al
INHALATION STUDIES OF NICKEL SULFIDE IN PULMONARY CARCINOGENESIS OF RATS
J. Nat. Cancer Inst. 54 (5): 1165-72 (1975)

Lung tumors developed in twenty-nine (14%) of the 208 rats (those in an examinable condition from a total of 226 at the start of the test) that inhaled nickel sulfide for 78 weeks (5 days/wk, 6 hr/day). In contrast, lung tumors were found in only 1% of the controls. Rats subjected to the nickel sulfide also showed a higher incidence of pulmonary inflammatory reactions. Although there was no significant difference in the deaths of animals during the first year, there were significant differences during the last 26 weeks. Less than 5% of the rats exposed to nickel sulfide survived until the end of the study; 31% of the controls survived. Half of the treated rats were injected with hexachlorotetrafluorobutane, an agent that induces lung infarction. This agent neither increased the proportion of animals having lesions nor did it change the type of lesions in animals exposed to nickel sulfide.

32-0029
GENERAL INFORMATION

Ott, M. Gerald et al
LINKING INDUSTRIAL HYGIENE AND HEALTH RECORDS
Am. Ind. Hyg. Assoc., J. 36 (10): 760-6 (1975)

Described here are the procedures developed by Dow Chemical Company to correlate data on employee exposure to hazardous chemicals with employee medical history, using the personnel record card as an essential link in the system. Dow initiated a company industrial hygiene program in the late 1930's.

32-0030
GENERAL INFORMATION

Anon
MANGANESE POISONING REPORTED...
Am. Ind. Hyg. Assoc., J. 36 (10): A-14 (1975)

A California foundry worker exposed to fumes from cutting and burning manganese steel developed manganese poisoning. A second such poisoning, also reported in California, was caused by manganese dioxide dusts used in glazing ceramics. Characterized by severe, persistent chronic depressive psychosis, transient acute brain syndrome, and various extrapyramidal symptoms, Mn poisoning is difficult to diagnose. Its symptoms usually do not occur until after several years of exposure.

32-0031
GENERAL INFORMATION

Anon
RUBBER WORKERS SUE...
Am. Ind. Hyg. Assoc., J. 36 (10): A-14 (1975)

Union workers reputedly injured by spills of phosgene and other toxic chemicals are suing Olin Corp. and General Tire & Rubber Co. for $2.5 million. Claiming that Olin has been discharging phosgene for years, the workers earlier had requested help from state and federal environmental agencies. Phosgene is not currently covered by any EPA standard.

32-0032
GENERAL INFORMATION

Anon
MICROWAVE HAZARDS
Lancet 2 (7937): 694 (11 October 1975)

Microwave radiation, which has been used as a source of heat in diathermy and more recently in cooking ovens, may be a long-term hazard to man's nervous and reproductive systems. From Bucharest comes a report [I. Lancranian et al, Health Physics 29: 431 (1975)] of a loss of libido and interference with spermatogenesis in technicians exposed to microwave radiation for several years.

32-0033
GENERAL INFORMATION

Zapp, J.A., Jr.
HMPA: A POSSIBLE CARCINOGEN (Letter to Editor)
Science 190 (4213): 422 (31 October 1975)

In a long-term inhalation study conducted by du Pont, rats were exposed to from 0 to 4000 ppb (by volume) of hexamethylphosphoramide (HMPA) for 6 hrs/day, 5 days/wk. Although no compound lesions occurred during the first six months, degenerative changes in the convoluted tubes of the kidneys caused deaths between months 6 and 8. In the 8th month, squamous cell carcinomas developed in the nasal cavities of some rats and penetrated into their brains. The incidence of tumors was dose-related. HMPA is used as a laboratory solvent and as a chemosterilant for insect pests. It has been shown to be mutagenic to some insects and to interfere with spermatogenesis in rats.

32-0034
GENERAL INFORMATION

Posner, Herbert S.
BIOHAZARDS OF METHANOL IN PROPOSED NEW USES
J. Toxicol. Environ. Health 1 (1): 153-71 (1975)

Numerous cases of poisoning from the ingestion or inhalation of methanol are reviewed along with the symptoms of delayed and irreversible toxicity. Among the unanswered questions about methanol is its potential effect on youngsters exposed to it. The review is timely because of the many new, large-scale uses now suggested for methanol -- as a source of energy, as a bacterial feedstock for feed protein, in waste water denitrification -- which open the way for potential environmental hazards. It is recommended that a safer compound be used, when possible.

32-0035
GENERAL INFORMATION

Hoel, David G. et al
ESTIMATION OF RISKS OF IRREVERSIBLE, DELAYED TOXICITY
J. Toxicol. Environ. Health 1 (1): 133-151 (1975)

Four sequential steps to follow in translating animal test results to human hazard risk are discussed in this review of the statistical methods now used and of current knowledge on the subject. Additional research is needed to improve the quality of models involving time-to-response techniques; more must be learned about man's heterogeneous nature and susceptible subgroups of humans.

32-0036
GENERAL INFORMATION

Berg, John W. and Howell, Margaret A.
OCCUPATION AND BOWEL CANCER
J. Toxicol. Environ. Health 1 (1): 75-89 (1975)

This review of U.S. and British mortalities from colonic and rectal cancers is linked with a broad group of occupations. A high risk for large-bowel cancer is associated with white-collar workers and with those in such manufacturing industries as metal work, textiles, and leather goods. There is some less conclusive correlations with workers exposed to dyes, meat handling, smoke inhalation, and chemicals. An earlier study indicated that bowel cancer risks might be associated with asbestos workers.

Anon
SCIENTIST CLAIMS NEW PROCESS FOR PRODUCING ELECTRICITY FROM COAL
Coal Age 80 (11): 298 (1975)

A non-polluting electrochemical process for producing electricity from low-grade coal or from the char that remains when oil is produced from coal was announced at a recent Energy Conversion Engineering Conference by Dr. Michael Ambar of Stanford Research Institute. The char is heated in a molten carbonate medium at 600-800°C without releasing sulfur oxides, nitrogen oxides, and particulates into the atmosphere. Cost data have not been calculated; some engineering problems remain to be solved.

33-0001
ACRYLONITRILE

Taninaka, Takumi and Minoura, Yuji
KINETIC STUDY OF RADICAL POLYMERIZATION OF ACRYLONITRILE IN THE PRESENCE OF TRIPHENYL PHOSPHITE
J. Polym. Sci. (Polym. Chem. Ed.) 13 (10): 2335-44 (1975)

In this investigation of the radical polymerization of acrylonitrile in the presence of triphenyl phosphite with α,α'-azobisisobutyronitrile (AIBN) initiation, the authors studied the reaction kinetics and derived equations for the rate and degree of polymerization

33-0002
ACRYLONITRILE

Taninka, Takumi et al
PHOTOPOLYMERIZATION OF ACRYLONITRILE IN THE PRESENCE OF SUBSTITUTED TRIPHENYL PHOSPHITES
J. Polym. Sci. (Polym. Chem. Ed.) 13 (10): 2353-62 (1975)

The photopolymerization of acrylonitrile under the influence of triphenyl phosphite (TPP) derivatives is reported. Although acrylonitrile alone did not polymerize, in the presence of TPP and its derivatives acrylonitrile polymerized at 30°C by ultraviolet radiation.

33-0003
ARSENIC

Anon
POLLUTION RULES MAY FORCE ASARCO TO SHUT SMELTER
Chem. Week 117 (18): 11 (29 October 1975)

Unless the Washington State Pollution Control Board rescinds an earlier decision of the Puget Sound Air Pollution Control Agency, Asarco Inc. claims that it will have to cease operations at its Tacoma, Wash., smelter. Asarco sees $20 million needed to add arsenic emissions pollution control facilities and an additional $200,000/yr in plant operating costs to meet OSHA's proposed 4-micron standard for worker exposure within the smelter.

33-0004
ARSENIC

Anon
ASARCO LOSES ANOTHER ROUND IN TACOMA POLLUTION BATTLE
Chem. Week 117 (20): 9 (12 November 1975)

The Washington State Pollution Control Board denied Asarco Inc.'s appeal to reverse the Puget Sound Air Pollution Control Agency's decision not to grant an arsenic emissions standards variance for Arsaco's Tacoma smelter. The Board found insufficient proof that the smelter's emissions are not a health hazard. In April 1976, the pollution agency will seek an injunction against Asarco's continuing to operate the smelter.

33-0005
ARSENIC

Talmi, Yair and Bostick, D.T.
DETERMINATION OF ALKYLARSENIC ACIDS IN PESTICIDE AND ENVIRONMENTAL SAMPLES BY GAS CHROMATOGRAPHY WITH A MICROWAVE EMISSION SPECTROMETRIC DETECTION SYSTEM
Anal. Chem. 47 (13): 2145-50 (November 1975)

The presence of arsenic acids as major, minor, or trace components in pesticides and in environmental samples can be detected by the use of a gas chromatograph with a microwave spectrometric detector. Relative sensitivity for water samples is claimed to be at least 0.25 μg/l.

33-0006
ARSENIC

Klemmer, H.W. et al
ARSENIC CONTENT OF HOUSE DUSTS IN HAWAII
Bull. Environ. Contam. Toxicol. 14 (4): 449-52 (October 1975)

Thirty-two homes in Hawaii where pesticides were used for termite control had higher levels of arsenic in the house dust than were found in 29 untreated homes. One exception, where dust samples from untreated home had exceptionally high arsenic content in the dust, were the homes of employees of pest control or wood treatment firms.

Anon
THE NAVY HAS REFUSED TO SEEK OUT. . .
Environment 17 (8): 23 (November 1975)

During WW II some 3 million shipyard workers were exposed to asbestos used to insulate pipes and valves. Many of these may be suffering from lung cancer or mesothelioma as a result of inhaling the asbestos. Although the Navy will pay workmen's compensation to those afflicted, it is not willing to seek out the shipyard workers who may have been exposed. Current shipbuilding techniques have apparently eliminated this problem.

See also: 33-0008, 3.3'-Dichlorobenzidine

Gadian, Theodore
CARCINOGENS IN INDUSTRY, WITH SPECIAL REFERENCE TO DICHLOROBENZIDINE
Chem. Ind. 19: 821-31 (4 October 1975)

Although 3,3'-dichlorobenzidine (DCB),because of the similarity of its chemical structure to that of benzidine, a known carcinogen, and because it is carcinogenic to animals,has been suspected as a human urinary tract carcinogen, the lack of a proper test population (those exposed only to DCB) has prevented the collection of significant statistics. Data have now been collected on 59 British DCB workers and the results show that none of them developed tumors, although workers exposed to mixed benzidine and DCB developed bladder cancers. It is concluded that DCB may not be a human carcinogen (unless the latent period is longer than 18 years) or that, if it is carcinogenic to man, it is a weaker one than benzidine.

Anon
TRIMETHYL PHOSPHITE
Chem. Eng. News 53 (44): 12 (3 November 1975)

Mobil Chemical expects to go onstream in early 1977 with its multi-million dollar second unit of a trimethyl phosphite plant in Charleston, S.C. The product is used in the manufacture of flame retardants and nonpersistent crop chemicals. Mobil is not divulging plant capacity.

33-0010
FLUOROCARBONS

Anon
MORE EVIDENCE ADDS TO OZONE CONTROVERSY
Chem. Eng. News 53 (44): 8 (3 November 1975)

Researchers at the National Bureau of Standards report that at 25°C they found the rate of reaction between chlorine and ozone to be only 60% of the value used by Rowland et al to predict stratospheric ozone depletion, and at -50°C NBS reports the reaction rate is only 44% of Rowland's value. Rowland argues that such changes in the reaction rate would not change the ozone depletion measurements.

33-0011
FLUOROCARBONS

Anon
NEW TECHNIQUE BOOSTS CO_2's PROPELLANT PROSPECTS
Chem. Week 117 (19): 55 (5 November 1975)

Adding impetus to the use of carbon dioxide as a replacement for fluorocarbon propellants is a newly announced system for packaging aerosol fragrances in glass containers. It involves a CO_2 valve made by Risdon Manufacturing of Naugatuck, Conn., and a high-pressure plastic-coated glass bottle by Wheaton Corp's Plasti-Cote Division in Mays Landing, N.J. The new valve permits Co_2 to deliver a spray pattern that remains consistent for the life of the package.

Barton, I.J. and Robertson, D.F.
MEASUREMENTS OF ERYTHEMALLY EFFECTIVE ULTRAVIOLET RADIATION AND TOTAL OZONE CONTENT
Nature 258 (5530): 68-9 (6 November 1975)

In separate studies in Australia and the U.S. measurements are being made of erythemally effective ultraviolet radiation - wavelengths between 290 and 320 nm. The resulting information shows the change in UV irradiance resulting from a change in total ozone content. The long-term monitoring is considered important because of the current ozone controversy.

Grant, D.L. et al
CHEMICAL (HCB) PORPHYRIA: EFFECT OF REMOVAL OF SEX ORGANS IN THE RAT
Bull. Environ. Contam. Toxicol. 14 (4): 422-5 (October 1975)

HCB was fed *ad libitum* to male and female weanling rats in dietary levels of 100 and 500 ppm (equivalent to 5 and 25 mg/kg). Females showed higher levels of hepatic porphyrins than males. An increase of porphyrins was found in the liver of rats given the 100 ppm diet, after the testes were removed; on the same diet, females whose ovaries were removed showed a decreased level of porphyrins in the liver. The higher-level HCB diet apparently masked this effect, but it appears that the mechanism of porphyria induction in rats depends upon the steroids produced by the testes and ovaries.

33-0014
ISOCYANATES
(Market)

Anon
TDI PRODUCERS ACT TO NARROW DISCOUNTS
Chem. Week 117 (20): 45 (12 November 1975)

Price of toluene diisocyanate seems to be moving up to the 45¢/lb mark. As of 15 Nov., Olin's price for TDI will be 40.8¢/lb; other manufacturers are planning to ask about 40¢/lb, a 5¢/lb discount from list.

33-0015
LIQUEFACTION AND GASIFICATION OF COAL

Anon
RILEY STOKER WILL MARKET COAL GASIFICATION UNITS
Chem. Week 117 (19): 55 (5 November 1975)

Riley Stoker's Riley division, Worcester, Mass., is offering a standard-size coal gasification unit that uses a fixed-bed, low-pressure, partial-oxidation process that will cost users \$1.60 to \$2.20/million Btus. Cost variation depends on type of coal burned. The gasifier has 10.5-ft diameter, and burns 3.5 tons coal/hr to give gas with a heating value of 125-150 or 250-300 Btus. The lower value is the result of air blowing; the higher, oxygen blowing.

33-0016
LIQUEFACTION AND GASIFICATION OF COAL

Beychok, Milton R.
ENVIRONMENTAL FACTORS IN PRODUCING SUPPLEMENTAL FUELS
Hydrocarbon Process. 54 (10): 78-81 (1975)

The results of an EPA-sponsored study on the process technology and environmental factors involved in producing 1) SNG from coal, crude oil, and naphtha; 2) liquid fuels from oil shale; 3) clean fuels from coal liquefaction; and in 4) importing gas supplies as LNG and methanol; or 5) regasifying imported LNG are summarized.

Comparative data are shown for thermal efficiency, So_2 emissions, No_x emissions, water intake, effluent discharge, and attainable property line noise level. As an example, the results, presented on the basis of tons emitted per unit of product Btu output, shows the naphtha SNG plant to have the lowest SO_2 emissions. The author suggests a more meaningful measurement would result, if measurement were based on the percentage of input sulfur released to the atmosphere. The full EPA report contains information on additional environmental factors.

33-0017
MODEL ECOSYSTEMS

Anon
ECOSYSTEM PRODUCTIVITY
Environ. Rep. 6 (12): 96 (31 October 1975)

National Academy of Sciences is offering at $11.50, "Productivity of World Ecosystems", the proceedings of a symposium covering productivity of oceans, fresh water, grassland, desert, temperate forests, and tundra.

33-0018
MODEL ECOSYSTEMS

Anon
SLUDGE/CROP CONTAMINATION
Environ. Rep. 6 (12): 93 (31 October 1975)

The human food chain may be irreversibly contaminated from cadmium-containing sewage sludge, according to D.E. Baker, College of Agriculture, Agricultural Experiment Station, Pennsylvania State University. His studies show that the leaves and grain of corn and soybean crops retain large amounts of cadmium applied in tests. Cadmium and other trace elements, therefore, should be removed from sewage sludge that will be used as a fertilizer.

Pope, Martin
INDUSTRIAL APPLICATIONS OF PHOTOCHEMISTRY
Pure Appl. Chem. 41 (4): 535-58 (1975)

This review of the most important technical applications of photochemistry includes a section on luminescence in which optical brighteners are described. The rigid, flat molecular structure of optical brighteners (used in detergents, paper, textiles, etc.) favors high fluorescence yields.

33-0020
PERCHLOROETHYLENE

Bonse, G. et al
CHEMICAL REACTIVITY, METABOLIC OXIRANE FORMATION AND BIOLOGICAL REACTIVITY OF CHLORINATED ETHYLENES IN THE ISOLATED PERFUSED RAT LIVER PREPARATION
Biochem. Pharmacol. 24 (19): 1829-34 (1 October 1975)

The uptake, solubility in liver tissue, metabolites, and enzyme activities of tetrachloroethylene, trichloroethylene, and dichloroethylenes in rats was studied in relation to the acute liver toxicity of these compounds.

33-0021
PERCHLOROETHYLENE

Nicholson, A. Arnold and Meresz Otto
ANALYSIS OF VOLATILE, HALOGENATED ORGANICS IN WATER BY DIRECT AQUEOUS INJECTION-GAS CHROMATOGRAPHY
Bull. Environ. Contam. Toxicol. 14 (4): 453-6 (October 1975)

Direct aqueous injection-gas chromatography with an EC detector was used to determine the volatile, halogenated compounds present in Ontario drinking water. The method was considered fast, sensitive, and accurate. A table lists the detection limits for some of the halogenated compounds found. For tetrachloroethylene, the detection limit was 8 μg/l.

33-0022
PHTHALATES

Giam, C.S. et al
RAPID AND INEXPENSIVE METHOD FOR DETECTION OF POLYCHLORINATED BIPHENYLS AND PHTHALATES IN AIR
Anal. Chem. 47 (13): 2319-20 (November 1975)

The electro-capture gas chromatograph, using Florosil to trap the tested compounds, proved to be a simple, inexpensive, and sensitive method for detecting low levels of certain phthalate esters, PCBS and DDT in the air. DEHP was one of the test compounds.

Phthalic acid esters are produced in amounts about 10 times greater than PCBS by industry.

33-0023
PHTHALATES

Giam, C. S. et al
SENSITIVE METHOD FOR DETERMINATION OF PHTHALATE ESTER PLASTICIZERS IN OPEN-OCEAN BIOTA SAMPLES
Anal. Chem. 47 (13): 2225-9 (November 1975)

Gas chromatography with an electron capture detector successfully detected background levels as low as 25 ng of dibutyl phthalate and 50 ng of di-2-ehtylhexyl phthalate (DEHP) (in the presence of chlorinated hydrocarbons) in marine biota samples.

About 1 billion lb/yr of phthalate plasticizers, which are widely dispersed in the environment and may be toxic to aquatic organisms, are manufactured.

Department of Labor, OSHA
TRICHLOROETHYLENE. PROPOSED OCCUPATIONAL EXPOSURE STANDARD
Fed. Regist. 40 (203): 49031-45 (20 October 1975)

OSHA's notice of proposed rulemaking for occupational exposure to trichloroethylene (TCE) reviews the general toxic effects of the compound and the results of tests measuring its effects on animals and humans. The proposed new standard, which would retain the current 8-hour time-weighted average limit for exposure to airborne concentrations of TCE of 100 ppm but would reduce the ceiling limit from 200 ppm to 150 ppm and delete the acceptable maximum peak of 300 ppm for 5 minutes in any 2 hour period, follows receipt of an alert by OSHA from NCI and NIOSH that TCE may be a carcinogen.

TRICHLOROETHYLENE

See: 33-0020, Perchloroethylene

See also: 33-0030, Vinyl Chloride

33-0025

Myers, G.A.
PREREFINING OF SHALE OIL (Letter to Editor)
Chem. Eng. News 53 (44): 3 (3 November 1975)

The author points out an error in this journal's report of his paper presented at the ACS Chicago meeting (See CATS 28-0018). The last paragraph should have stated that several arsenic removal processes, including caustic washing, were investigated. However, Atlantic Richfield's process, now available for licensing, is a different process, much more efficient than caustic washing.

33-0026
VINYL CHLORIDE

Cascaval, C.N. et al
PYROLYSIS-GAS CHROMATOGRAPHY OF POLYMERS OBTAINED BY FRIEDEL-CRAFTS REACTIONS OF POLY(VINYL CHLORIDE) WITH AROMATIC COMPOUNDS
J. Polym. Sci., Polym. Chem. Ed. 13 (10): 2259-68 (1975)

Pyrolysis gas chromatography was used successfully to determine the structure and the mechanism of the thermal degradation of some condensation polymers of PVC with benzene, toluene, and naphthalene.

33-0027
VINYL CHLORIDE

Anon
VINYL CHLORIDE AND BIRTH DEFECTS
Sci. News 108 (19): 297 (8 November 1975)

Testifying before the California State Senate, Joseph Wagoner, director of field studies for NIOSH, reported that people living near PVC manufacturing plants run the risk of giving birth to children with birth defects and adults may develop brain tumors. He cited the reported studies by Peter F. Infante covering three Ohio towns where PVC is made. (See also: CATS 26-0024)

33-0028
VINYL CHLORIDE

Anon
A JAPANESE NATIONAL SAFETY STANDARD FOR VINYL CHLORIDE. . .
Chem. Eng. News 53 (45): 10 (10 November 1975)

Following the death from liver cancer of a Nagoya worker exposed to vinyl chloride for a long time, Japan may establish a national safety standard for VC before the end of 1975. A provisional 2 ppm limit inside monomer plants has been established and workers exposed to VC have been asked to get medical examinations.

33-0029
VINYL CHLORIDE
(Markets)

Anon
PVC FACES MARKET LOSSES, BUT WILL SURVIVE
Chem. Eng. News 53 (45): 13-4 (10 November 1975)

The polyvinyl chloride industry will evidently not suffer the decline anticipated when it was first learned that vinyl chloride caused cancers, primarily because of production improvements minimizing the unpolymerized VC content of PVC. Proposed government regulations may cause a decline in food-related PVC markets, especially if these regulations affect piping for potable water but, in general, PVC should retain a strong market.

Potential competitors for PVC are oriented polypropylene in the food market and the new polyolefin elastomers (from Du Pont, Exxon, B.F. Goodrich, Hercules, and Uniroyal), which are cutting into PVC's use for auto sight shields, wire and cable jacketing, gaskets, specialty tubing, and sporting goods.

Reynolds, Edward S. et al
HEPATOXICITY OF VINYL CHLORIDE AND 1,1-DICHLOROETHYLENE
Am. J. Pathol. 81 (1): 219-36 (October 1975)

Rats pretreated with phenobarbital before receiving a single 5-hr exposure to 5% VCM (reported in an earlier study) developed acute liver injury. In this study, pretreatment with Aroclor 1254 produced similar results. The hepatoxic effects of phenobarbitol pretreatment seem to result from an increase or change in the metabolism of diverse halocarbons traced to the mixed function oxidase system (MFOS). Comparison is made with the liver injuries caused by 1,1-dichloroethylene and trichloroethylene under certain conditions. This study of the role of differential induction of MFOS components by zenobiotics in the acute responses of animals to vinyl chloride and 1,1-dichloroethylene indicates a need to determine the basic chemical processes involved in vinyl chloride injury.

Anon
VINYLIDENE CHLORIDE
Chem. Eng. News 53 (45): 14 (10 November 1975)

When completed in 1978, the expansion of PPG's Lake Charles, La., facility should add over 50 million lb/yr to the company's vinylidene chloride capacity.

33-0032
NITROSAMINES

Liener, Irvin E., editor
TOXIC CONSTITUENTS OF ANIMAL FOODSTUFFS
Academic Press, NYC, 1974. 222 pp. $31.00

This book on food science and technology contains a section on nitrosamines, written by N.P. Sen, according to a recent announcement in "Current Contents - Life Sciences".

33-0033
NITROSAMINES

Fine, David H. et al
ANALYSIS OF VOLATILE N-NITROSO COMPOUNDS IN DRINKING WATER AT THE PART PER TRILLION LEVEL
Bull. Environ. Contam. Toxicol. 14 (4): 404-8 (October 1975)

Examination of water supplies in the New Orleans and Boston areas, using two different concentration and extraction methods, failed to show the presence of volatile N-nitrosamines in the water at the sub μg/l level. Test procedures were based on liquid-liquid extraction and on adsorption of the organic fraction on carbon followed by extraction with chloroform and alcohol.

Anon
ADDITIVES ON WAY OUT?
Chem. Week 117 (18): 17 (29 October 1975)

Following a report by USDA's panel on nitrites and nitrosamines, the Agriculture Dept. may ban the use of nitrate additives and reduce permissible nitrite residue levels in meat and poultry products.

Considering proposed limits on nitrite residues in bacon, which contains the highest levels of nitrosamines, USDA expects to recommend in December a level that will preclude nitrosamines formation. One difficulty is the lack of a nitrite substitute that would effectively prevent botulism.

33-0035
GENERAL INFORMATION

Spence, J.W. et al
EFFECTS OF GASEOUS POLLUTANTS ON PAINTS: A CHAMBER STUDY
J. Paint Technol. 47 (609): 57-63 (October 1975)

As part of a long-range program to develop dose response relationships between environmental factors and exterior coatings, four types of exterior paints (oil-base house paint, acrylic latex house paint, vinyl coil coating, and acrylic coil coating) were exposed to sulfur dioxide, ozone, nitrogen dioxide, and humidity in a controlled environment. In more than 20,000 hours of exposure time, SO_2 concentration appeared to have a significant effect on the erosion rate of housepaints. In a regression analysis, SO_2 concentration and humidity governed 61% of the variability. Reaction of SO_2 with the aluminum substrate voided the data on erosion rates of acrylic latex housepaints. For vinyl coil coating, SO_2 times relative humidity accounted for 34% of the variability, but at the primary standard of 80 μg/cu m SO_2 the SO_2 apparently contributed to less than 5% of the erosion rate. Acrylic coil coating had the lowest erosion rates, affected primarily by ozone. Test results preclude the need of additional tests with the three pollutants, but the results are not necessarily representative of the erosion characteristics of an entire class of paints, which will be governed by particular paint components. Paints with calcium carbonate extenders might be more susceptible to SO_2.

33-0036
GENERAL INFORMATION

Thomson, A.J.
BIOCHEMISTRY OF TRANSITION METALS
Nature 257 (5527): 536-7 (16 October 1975)

Although the biochemical activities of Mn, Fe, Co, Cu, and Zn are well known, less is known about the other five elements of the first transition series. Vanadium, however, has been found in high concentrations in the blood cells of ascidians (sea squirts). The biological roles of chromium and nickel are now of interest, and the role of chromium in glucose metabolism in man and animals has been documented.

Nickel, long considered biologically inactive, has now been reported in the blood sera of man and animals at certain levels, and jack bean urease has been identified as a metalloenzyme containing Ni. In addition to vanadium, Carlisle in 1968 reported the accumulation by some species of marine animals of Ti, Cr, Mn, Fe, and Ta, and the possible accumulation in these species of Mo, Zr, and W.

33-0037
GENERAL INFORMATION

Anon
AIR POLLUTION FROM SEWAGE TREATMENT PLANTS?
Environ. Rep. 6 (12): 91 (31 October 1975)

Potentially pathogenic bacteria may be present in the gaseous effluents discharged from sewage treatment plants, according to a study by the City University of New York in which certain such bacteria were detected in the atmosphere.

Attention should be paid to facilities located upwind of those places inhabited by the young, the old, or the infirm, who may be prey to infections. Treatment plant workers may also be exposed.

33-0038
GENERAL INFORMATION

Anon
MICROWAVE EFFECTS PROCEEDINGS
Environ. Rep. 6 (12): 92 (31 October 1975)

Bureau of Radiological Health (HFX-25), 5600 Fishers Lane, Rockville, Md. 20852 has available some free copies of PB-739 554, the proceedings of an Oct. 1973 "International Symposium on the Biological Effects and Health Hazards of Microwave Radiation", which is also available at $10 from NTIS.

33-0039
GENERAL INFORMATION

Proctor, Nick H. and Casida, John E.
ORGANOPHOSPHORUS AND METHYL CARBAMATE INSECTICIDE TERATOGENESIS: DIMINISHED NAD IN CHICKEN EMBRYOS
Science 190 (4214): 580-2 (7 November 1975)

Increasing substitution of organophosphorus (OP) and methyl carbamate (MC) compounds for chlorinated pesticides necessitates an understanding of their potential health hazards.

In this study of the mechanism of teratogenesis in chicken embryos it appears that the OP and MC teratogenic effects are related to the degree of reduction in the embryo nicotinamide adenine dinucleotide (NAD) levels. The data presented may be useful in assessing other types of biological activities of these pesticides, which are not associated with inhibition of acetylcholinesterase.

33-0040
GENERAL INFORMATION

Anon
PLUTONIUM SHIPMENTS BY AIR. . .
Environment 17 (8): 21 (November 1975)

Following Congressman Aspin's concern that the import by air of hundreds of pounds of plutonium oxide could cause a disaster at Kennedy Airport in New York, or elsewhere, a new law has been passed that bans such shipments pending development of a crash- and explosion- proof container. As of 20 August 1975, the Nuclear Regulatory Commission suspended plutonium air shipments indefinitely. (See also: CATS 19-0038).

Anon
CHEMICAL METHOD RECOVERS COPPER FROM ORE, TAILINGS
Chem. Week 117 (21): 40 (19 November 1975)

Air Products and Chemicals will study the economic feasibility of a reportedly promising technique to recover copper from ores or from copper tailings. In this Australian developed method cuprous sulfate solutions are leached from roasted copper concentrates using a not too expensive solvent, acetonitrile in water. The copper is recovered when the acetonitrile solution is distilled. Process advantages include operation under low-pressure steam and low SO_2 emissions. On the other hand, Anaconda rejected a similar process some months ago, when trials at its Butte, Montana smelter showed it to be not economical.

Anon
SLOWER FIBER GROWTH
Chem. Week 117 (22): 16 (26 November 1975)

Fiber market forecasters see a slow down in consumption in the coming years. Total world synthetic fiber consumption will increase 10%/year during the 1972-1980 period, while world capacity will grow at 8%/year for the same period. Among raw materials, acrylonitrile could be in short supply in 1977 and 1980, based on the estimated demand for acrylic fibers. Additional acrylonitrile capacity is planned for 1981; help for U.S. demand may come from development of offshore acrylonitrile projects.

Rossman, Toby et al
EFFECTS OF SODIUM ARSENITE ON THE SURVIVAL OF UV-IRRADIATED *ESCHERICHIA COLI*: INHIBITION OF A recA-DEPENDENT FUNCTION
Mutat. Res. 30 (2): 157-62 (November 1975)

Epidemiological and clinical data have linked arsenicals with cancer, particularly skin cancer, but animal studies have not confirmed these observations. To determine if arsenic compounds under certain conditions might be cocarcinogens the authors investigated the possibility of arsenic compounds interfering with DNA repair. Sodium arsenite tested on *E. coli* inhibited repair of UV-induced lesions in wild-type and excision-defective strains; the effect increased with increasing UV. The arsenite did not affect *recA* strains, but increased the survival of *exrA* strains. These results indicate that, if arsenite is found to inhibit repair in eukaryotic cells, that could explain the cocarcinogenic effect of arsenic compounds.

34-0004
FLUOROCARBONS

Lillian, Daniel et al
ATMOSPHERIC FATES OF HALOGENATED COMPOUNDS
Environ. Sci. Technol. 9 (12): 1042-8 (November 1975)

Maximum, minimum, and average concentrations of 11 halocarbons were obtained under various geographical and meteorological conditions at various U.S. urban and nonurban locations and over the ocean. Certain compounds (CCl_3F, CCl_2F_2, CH_3CCl_3 and CCl_4) were easily measurable and were found at all locations, generally in sub-ppb concentrations. Others were found primarily near urban areas; others only in areas where a possible source existed. Vinyl chloride appeared only in Delaware City, Del., in concentrations up to 1.5 ppm. The halocarbons are useful tracers of atmospheric transport.

34-0005
FLUOROCARBONS

Jaffe, Richard J.
CHLOROFLUOROCARBON PROBLEM (Letter to Editor)
Chem. Eng. News 53 (47): 3 (24 November 1975)

Pointing out that some precious letters on the subject contained misinformation, the writer spells out known facts on chlorofluorocarbons, which he concludes definitely indicate their implication in depleting the ozone layer of the earth. He recommends that provisional phasing out of "Freon" production should start now, while research is underway, with final or permanent action to follow after the studies are completed.

Anon
POLYURETHANE CHEMICALS ARE GOING STRONG AGAIN
Chem. Eng. News 53 (47): 7 (24 November 1975)

Isocyanates, polyols and other polyurethane chemicals are selling well again, according to Union Carbide's R.H. Hughes. Carbide's polyurethane business started on the upward trend in the spring and has been going strong since July. Polyurethane chemicals, among the first casualties of the recession, might well serve as indicators for the status of the chemical industry in general.

Swaffield, Laura
CUTTING OUT CANCERS
Nature 258 (5531): 94-5 (13 November 1975)

The ILO set forth a Convention and a Recommendation on international standards to protect workers against carcinogens, which should help in establishing useful principles and counteracting past abuses. However, the documents cover only known carcinogens. Difficulties in determining limits for standardized international agreements for occupational exposure levels are illustrated by contrasting industry's action on two chemicals. Although 2-naphthylamine was considered a potential carcinogen in 1938, some companies did not start screening workers until 1960 or 1965. By 1970, about 450 workers were found to have bladder cancer. On the other hand, VCM-caused angiosarcomas were discovered in early 1974 and, by mid-1974, England's Dept. of Employment was working to lower the threshold limit value of VCM from 50 to 25 ppm.

34-0008
POLYURETHANES
(Markets)

Anon
PETER SHERWOOD ASSOCIATES, INC. . . .
Rubber Age 107 (11): 6 (1975)

Increasing markets for polyurethane are predicted in a multi-client study by Peter Sherwood Associates, Inc., N.Y.C. The optimistic estimates given may actually be too low.

POLYURETHANES

See: 34-0006, Isocyanates

34-0009
VINYL CHLORIDE
(Production)

Anon
SEEKING VCM SUPPLY
Chem. Week 117 (21): 13 (19 November 1975)

Needing more vinyl chloride, Robintech Inc. (Fort Worth, Texas) seeks to buy a major chemical complex, probably Allied Chemical's Baton Rouge, La., plant with an estimated annual capacity of 300 million lb. VCM, which would supply Robintech's PVC unit at Painesville, Ohio.

Shintech, jointly owned by Robintech and Shin-Etsu of Japan, operates a 220-million-lb/yr PVC plant at Freeport, Texas, which receives VCM from Dow's Freeport plant. Dow is expanding its plant to 330 million lb/yr of VCM, a 50% increase.

34-0010
VINYL CHLORIDE

Anon
PULLING OUT OF PVC
Chem. Week 117 (22): 14 (26 November 1975)

Increasing costs, particularly those necessitated by OSHA's standards and EPA emissions rules, prompted Uniroyal Chemical to phase out all PVC resin production at its 125-130-million-lb/yr Painesville, Ohio plant.

See: *34-0004, Fluorocarbons

34-0007, Naphthylamines

34-0011
GENERAL INFORMATION

Anon
TREES GET THEIR SIGNALS CROSSED: THE CULPRIT IS SECURITY LIGHTING
NYS Environ. 5 (5): 9 (November 1975)

High pressure sodium street lights are affecting the growth patterns of 16 or more tree species, with some trees continuing to grow during Fall. Such rapid growth in the wrong season makes the trees, and their leaves, more sensitive to the harmful effects of air pollutants.

34-0012
GENERAL INFORMATION

Beil, Karen M.
COKE OVENS VERSUS PUBLIC HEALTH
NYS Environ. 5 (5): 4 (November 1975)

According to Dr. Beverly Paigen, Roswell Park Memorial Institute, Buffalo, 25% of coke oven workers, who work on top of the ovens for at least 5 years, will die of lung cancer. She traces the cause of the cancer to benzo(a)pyrene and indicates that individuals with a higher level of the enzyme, aryl hydrocarbon hydroxylase, are more susceptible. Coke ovens are responsible for 97% of the benzo(a)pyrene in Erie County air. Bethlehem Steel emits 8.5 tons/yr, Donner-Hanna, 2.5 tons; and Allied Chemical Semet Solvey Division, 1 ton.

34-0013
GENERAL INFORMATION

Anon
EARTHWORMS AS MONITORS OF HEAVY METALS IN SEWAGE SLUDGE?
Environ. Sci. Tech. 9 (12): 1008 (November 1975)

Soil scientists at the University of Wisconsin-Madison report earthworms take up metals in the soil and then, when placed in "clean" soil, release the metals. Tests were made with radioactive cobalt, cadmium, zinc and mercury, indicating that the worms may be used to monitor heavy metals in sewage sludge.

34-0014
GENERAL INFORMATION

Rosenkranz, Herbert S. et al
CHLOROPROPANOL, A MUTAGENIC RESIDUE RESULTING FROM PROPYLENE OXIDE STERILIZATION
Mutat. Res. 30 (2): 303-4 (November 1975)

The fumigant, propylene oxide, has been widely used to sterilize cereals, dried fruits fruits, cocoa, etc. During sterilization procedures the non-volatile residual chloropropanols (1-chloro-2-propanol and 2-chloro-1-propanol) are formed.

A preparation containing these compounds was found to be mutagenic to *Salmonella typhimurium* TA1530. Because consumption of 1 lb of fumigated food may cause an intake of up to 21 mg of 1-chloro-2-propanol, daily intake could be high. Alternate sterilization methods should be sought and animal carcinogenicity studies are recommended.

34-0015
GENERAL INFORMATION

Anon
WATER FLUORIDATION DOES NOT CAUSE CANCER. . .
Chem. Eng. News 53 (47): 25 (24 November 1975)

After studying cancer mortality patterns over a 15-year period in areas with 95% of the population exposed to fluorides in water, the NCI has concluded that fluoridation does not cause cancer. Where there were high levels of natural fluorides, there was less mortality from brain and nervous system cancers.

34-0016
GENERAL INFORMATION

Anon
THALLIUM TENDS TO SETTLE INTO STREAM SEDIMENT. . .
Chem. Eng. News 53 (47): 25 (24 November 1975)

In a study for EPA, Calspan Corp. reported that thallium seems to settle into stream sediment instead of moving up through the food chain. Heavy metals tend to accumulate more in rooted plants than in algae, fish, or other biota.

See: 35-0001, Acrylonitrile

35-0001
ACRYLONITRILE

Anon
ACRYLONITRILE (Sohio Process) - The Badger Co., Inc.
Hydrocarbon Process. 54 (11): 108 (November 1975)

Reactor operating conditions are illustrated for the production of acrylonitrile from propylene, anhydrous fertilizer grade ammonia and air. Fluid-bed catalyst (catalyst 41) now used in process increases yield of acrylonitrile over that obtained previously. Possible by-products are high-purity HCN and acetonitrile. Process, used in 45 or more plants (with annual capacities of approximately 20 million to 350 million lb), accounts for world-wide capacity of over 5 billion lb/yr acrylonitrile.

35-0002
ACRYLONITRILE

Anon
REICHHOLD WILL BUY STANDARD BRANDS CHEMICAL FOR MORE THAN $20 MILLION
Chem. Week 117 (24): 13 (10 December 1975)

Purchase of Standard Brands Chemical Industries, Dover, Delaware, by Reichhold Chemicals, White Plains, New York, for over $20 million is expected in January 1976. This subsidiary of Standard Brands with annual sales of $45-50 million is big producer of polymers and latexes, including acrylonitrile.

35-0003
ARSENIC

Matsumoto, N. et al
FETAL BODY BURDEN OF CHEMICALS AND ITS EFFECT ON FETAL GROWTH
Abstract of Paper Presented at 15th Annual Meeting of the Congenital Anomalies Research Association of Japan, Tokyo, Japan, November 7-9, 1975 in: Teratology 12 (2): 203 (October 1975)

Arsenic, lithium, cadmium and chromium were used in experiments designed to determine the distribution of chemicals among maternal-placento-fetal units (species not identified) and dose-response relationship. Fetal tissues retained arsenic long after administration. Higher doses of arsenic resulted in lower-weight fetuses at day 18 of gestation. Intra uterine growth retardation was observed with all the chemicals.

35-0004
ARSENIC

Wilshire, Frank W. et al
RAPID RADIOCHEMICAL SEPARATION OF SELECTED TOXIC ELEMENTS IN ENVIRONMENTAL SAMPLES PRIOR TO GAMMA RAY SPECTROMETRY
Anal. Chem. 47 (14): 2399-2403 (December 1975)

Liquid anion exchange, using triisooctylamine, successfully separated the radioactive isotopes of arsenic, cadmium, mercury, selenium, iodine, and zinc, permitting more accurate analysis of environmental samples by gamma ray spectrometry.

Anon
NAS PANEL UPHOLDS EPA's PESTICIDES POLICY
Chem. Eng. News 53 (49): 17 (December 8, 1975)

In its "Contemporary Pest Control Practices and Prospects", a report to be published in January 1976, the NAS Consultative Panel on Health Hazards of Chemical Pesticides approves EPA's "nine principles" of carcinogenicity on which EPA bases its pesticide decisions.

The Panel reports that the increase in deaths from lung and pancreas cancers and from leukemia was apparent before the widespread use of synthetic organic pesticides. Except for arsenic, many human carcinogens (e.g., asbestos, benzidine, bis(chloromethyl) ether, vinyl chloride, 2-naphthylamine) have been found to be carcinogens in test animals. The Panel reports that a life-time human incidence on a dose-per-body-weight basis, based on animal tests, can be accurately predicted for such carcinogens as benzidine, vinyl chloride and four others.

See: 35-0005, Arsenic

See also: 35-0033 Vinyl chloride

Vesselinovitch, S.D. et al
FACTORS MODULATING BENZIDINE CARCINOGENICITY BIOASSAY
Cancer Res. 35 (10): 2814-9 (1975)

Adult mice given benzidine dihydrochloride in their diet for 84 weeks (at dose levels of 50, 100, or 150 ppm) developed dose-related liver tumors, with females showing the greater susceptibility. When benzidine was given by stomach intubation over the same period of time, the carcinogenic effects were more evident in the lung than in the liver. Male mice receiving 150 ppm of benzidine dihydrochloride for only 39 or 44 weeks had a higher incidence of liver tumors than those eating the compound for 84 weeks. When infant mice were given 30 µg/day of benzidine by stomach intubation, only the males developed liver tumors.

BENZIDINE

See: 35-0005, Arsenic

McGinley, John R. and Schweikert, Emile A.
DETERMINATION OF LITHIUM, BORON, AND CARBON BY QUASI-PROMPT CHARGED PARTICLE ACTIVATION ANALYSIS
Anal. Chem. 47 (14): 2403-7 (December 1975)

Charged particle bombardment of lithium, boron, and carbon provides a rapid, sensitive method for the nondestructive trace analysis of these elements in botanical specimens and other materials.

35-0008
FLAME RETARDANTS

Anon
DIAMOND SHAMROCK. . .
Chem. Eng. 82 (25): 23 (24 November 1975)

New 90-million lb/yr chlorinated paraffins plant planned for 1977 operation by Diamond Shamrock Corp. near Houston, Texas, will triple capacity of company, which now operates a plant at Painesville, Ohio. Product is expected to be used as fire-retardant additives.

35-0009
FLAME RETARDANTS

Anon
MOBIL CHEMICAL. . .
Chem. Eng. 82 (25): 90 (24 November 1975)

Trimethyl phosphite, intermediate in flame retardants and non-persistent crop chemicals, will be available in greater amounts when Mobil Chemical Co. goes onstream in 1977 with new Charleston, S.C., plant.

Anon
CHEMICALS LIMIT BLAZE DAMAGE
Chem. Week 117 (23): 16 (3 December 1975)

Phos-Chek monoammonium phosphate, flame retardant manufactured by Monsanto, was used to combat recent forest fires near Los Angeles. Over 20 million gal/yr of flame retardants are used for fighting forest fires.

35-0011
FLUOROCARBONS

Telegadas, K. and Ferber, G.J.
ATMOSPHERIC CONCENTRATIONS AND INVENTORY OF KRYPTON-85 IN 1973
Science 190 (4217): 882-3 (28 November 1975)

From concentrations of krypton-85 measured in the atmosphere in 1973 at 1.5 to 20 kilometers, the total global burden of this radioisotope in the atmosphere was calculated to be 53 Mc. An increasing concentration of krypton-85 in the atmosphere has resulted from nuclear industry growth over the last 20 years.

The distribution of fluorocarbon-11 in the stratospheric resembles that of krypton-85. Both are inert gases but, if fluorocarbon-11 dissociates, its distribution above 20 km should be different from that of krypton-85. Because the latter has no sink in the region above 20 km and its half-life (10.76 years) is known, comparisons of its distribution with that of fluorocarbon-11 might provide data useful in analyzing the stratospheric ozone depletion problem.

35-0012
FLUOROCARBONS

Anon
VOLCANO MAY TEST OZONE THEORY
Household and Pers. Prod. Ind. 12 (11): 8 (1975)

The expected eruption of a volcano in Alaska may offer a means of testing the ozone depletion theory, according to Dr. J.P. Lodge, new advisor to the Council on Atmospheric Sciences. Earlier, the eruption of Mount Agung in Bali, while emitting much chlorine into the atmosphere, did not cause the effect in the stratosphere that had been anticipated.

Anon
DATA ON OZONE, DRINKING WATER REFINED
Chem. Eng. News 53 (49): 6 (8 December 1975)

Scientists present at the First Chemical Congress of the North American Continent, Mexico City, were told by Rowland and Molina (Univ. of California, Irvine) that they had confirmed that the absorption cross section of F-12 at 2139 A in the stratosphere is lower than at room temperatures, but that over the entire wave length range and stratospheric temperature range their new calculations show that the weighted absorption cross sections are only about 20% smaller than those at room temperature. Their measurements indicate a 10% longer atmospheric residence time for F-12. Similar results were obtained with chlorofluorocarbon-11.

Van Duuren, Benjamin L. et al
CARCINOGENIC ACTIVITY OF DI- AND TRIFUNCTIONAL α-CHLORO ETHERS AND OF 1,4-DICHLOROBUTENE-2 IN ICR/HA SWISS MICE
Cancer Res. 35 (9): 2553-7 (1975)

Five α-chloro ethers and trans-1,4-dichlorobutene-2 were tested for carcinogenicity in female mice. Bis-1,2(chloromethoxy)ethane, bis-1,4(chloromethoxy)-p-xylene, and tris-1,2,3(chloromethoxy)propane all caused a high degree of tumors, whether applied to the skin or injected by the i.p. or s.c. route. Bis-1,4(chloromethoxy) butane, bis-1,6(chloromethoxy)hexane, and trans-1,4-dichlorobutene-2 caused few tumors or were inactive by one or more routes of administrations. Bis-1,4(chloromethoxy)-p-xylene was the most carcinogenic of the compounds tested.

HALOETHERS

See: 35-0005, Arsenic

Stonard, M.D.
MIXED TYPE HEPATIC MICROSOMAL ENZYME INDUCTION BY HEXACHLOROBENZENE
Biochem. Pharmacol. 24 (21): 1959-63 (1 November 1975)

Microsomal spectral changes induced by hexachlorobenzene (HCB) were compared with those induced by 3-methylcholanthrene and phenobarbitone. Apparently, HCB, which causes a mixed type induction, including the microsomal changes induced by both phenobarbitone and 3-methylcholanthrene.

Wyrobek, A.J. and Bruce, W.R.
CHEMICAL INDUCTION OF SPERM ABNORMALITIES IN MICE
Proc. Nat. Acad. Sci. U.S.A. 72 (11): 4425-9 (1975)

Examination of the sperm of mice given 5 consecutive, daily intraperitoneal injections of 25 potentially mutagenic, teratogenic or carcinogenic chemicals were examined at 1, 4, and 10 weeks after the end of exposure. Elevated levels of sperm abnormalities were induced by 19 of the chemicals, but not by 1,1-dimethylhydrazine, dimethylnitrosamine, urethane, DDT [1,1,1-trichloro-2,2-bis (p-chlorophenyl)ethane], caffeine, and calcium cyclamate.

HYDRAZINE

See also: 35-0037, Nitrosamines

Anon
COAL CONVERSION ACTIVITIES PICKING UP
Chem. Eng. News 53 (48): 5 (1 December 1975)

Legislative and financial problems rather than a lack of confidence in the technical feasibility of coal conversion processes have been impeding the development of a U.S. coal conversion industry. Federal and state support is needed to get industry and banks to start moving, and the recent action of the state of Illinois in providing $70 million in bonding to help support demonstration projects has already prompted a move by Coalcon Co. to start a demonstration plant. Major coal conversion processes under consideration for U.S. exploitation are reviewed briefly.

See: 35-0005, Arsenic

35-0018
PERCHLOROETHYLENE

Anon
PERCHLOROETHYLENE-TRICHLOROETHYLENE---PPG INDUSTRIES, INC.
Hydrocarbon Process. 54 (11): 169 (1975)

Flowsheet describes oxychlorination/oxyhydrochlorination process for making perchloroethylene and trichloroethylene with no by-product HCl, using as starting materials ethylene dichloride, recycled chlorinated organics, chlorine, and oxygen. By-product streams from vinyl chloride plants can also by used as process feedstock in this single-step PPG process. World-wide per- and trichloroethylene production capacity for plants (existing or being built) using this process is about 1 billion lb/yr.

35-0019
PERCHLOROETHYLENE

Greim, H. et al
MUTAGENICITY IN VITRO AND POTENTIAL CARCINOGENICITY OF CHLORINATED ETHYLENES AS A FUNCTION OF METABOLIC OXIRANE FORMATION
Biochem. Pharmacol. 24 (21): 2013-7 (1 November 1975)

The mutagenicity of the chlorinated ethylenes (tetrachloroethylene, cis- and trans-1,2-dichloroethylene, 1,1-dichloroethylene, and vinyl chloride) were determined with a metabolic activating microsomal enzyme system *in vitro*.

A wide variation in the cytotoxicity of these compounds was noted. For 80-100% survival of the tester strain only 1 mM of trichloroethylene could be used versus 10 mM of vinyl chloride. Mutagenic activity depended upon microsomal enzyme activity. VCM was more mutagenic than trichloroethylene and 1,1-dichloroethylene. The other 3 compounds were not metabolized to mutagens.

See also: 35-0033, Vinyl chloride

Anon
CONFERENCE TAPS WATER-QUALITY ISSUES
Chem. Week 117 (24): 52-3 (10 December 1975)

At the First Chemical Congress of the North American Continent, held recently in Mexico City, EPA researchers discussed factors governing presence of volatile organics in drinking water and reported that minute concentrations of a phthalate ester had been detected in samples of water from the Gulf of Mexico.

In another report, T.C. Shields of Ashland Oil announced the development of a new fuel additive, identified only as AMD-4, which is said to be more effective than MD (N,N'-disalicylidine-1,2-propanediamine), the standard antioxidant used since the 1940's to prevent metals in tanks and engines from catalyzing the oxidation of gasoline and diesel fuels.

35-0021
POLYURETHANES
(Uses)

Anon
PLASTIC SCREENS VANQUISH ABRASIVES
Chem. Eng. 82 (25): 35 (24 November 1975)

C.E. Tyler Industrial Products, Mentor, Ohio, claims new steel-reinforced polyurethane (Tyrethane) screens that can be used to classify crushed stone, iron and copper ores, coal, sand, gravel, and some chemicals are more abrasion-resistant, last longer, and more economical than woven wire cloth screens.

35-0022
POLYURETHANES

Nomura, T.
TERATOGENESIS AND CARCINOGENESIS BY URETHAN IN MICE
Abstract of Paper Presented at 15th Annual Meeting of the Congenital Anomalies Res. Assoc. of Japan, Tokyo, Japan, November 7-9, 1975
in: Teratology 12 (2): 190 (October 1975)

Pregnant mice were given from 0.2 to 1.5 mg/g body weight of urethan on days 3 to 19 of gestation and mortality, malformation, and tumor development were watched in the developing embryo. Malformation occurred only in organs exposed at the early stage of organogenesis. Maximum lung anomaly resulted from a dose of 1.5 mg/g on day 9; maximum liver anomaly occurred on day 8. Malformation incidence dropped from 93 to 34% at 1.5 mg/g to almost zero at 1.0 mg/g. In contrast, lung and liver tumors developed from urethan given during late organogenesis and fetal growth of each organ, even in amounts as small as 0.2 mg.

35-0023
POLYURETHANES

Yasuda, Y. and Nishimura, H.
A COMPARISON OF DIGITAL MALFORMATION INDUCED BY URETHANE IN VITRO WITH THOSE INDUCED IN VIVO.
Abstract of aper Presented at 15th Annual Meeting of the Congenital Anomalies Res. Assoc. of Japan, Tokyo, Japan, November 7-9, 1975
in: Teratology 12 (2): 218-9 (October 1975)

Pre- and postaxial polydactyly were induced when hind limbs from 13-day mouse embryos were cultured with 0. 10, 50 pr 100 μg/ml on a liquid medium for 2 days. Administration of urethane *in vivo* on day 8 or 9 of gestation induced polydactyly in the hind limbs and adactyly or syndactyly after administration on day 10 of pregnancy, suggesting a possible difference in *in vivo* and *in vitro* digital malformation mechanisms.

35-0024
POLYURETHANES

Matsuyama, Mutsushi et al
ULTRASTRUCTURE OF SPONTANEOUS AND URETHAN-INDUCED THYMOMAS IN BUFFALO RATS
Cancer Res. 35 (10): 2771-9 (1975)

Electron microscopy was used to compare normal thymuses of rats and spontaneous and urethane thymomas induced in rats by urethane.

See: 35-0016, Hydrazine

Anon
A SHALE OIL PROJECT. . .
Chem. Eng. 82 (26): 81 (8 December 1975)

American Lurgi Corp. and Dravo Corp. will build a 4,000 ton/day shale oil plant, based on Lurgi-Ruhrgas coal-gasification technology, in western U.S. in next 2 or 3 years. Possible cost: $25-30 million. Environmental advantages: low NO and SO_2 emissions.

See: 35-0018, Perchloroethylene

See: 35-0019, Perchloroethylene

See also: 35-0033, Vinyl chloride

35-0026
VINYL CHLORIDE

Anon
VINYL CHLORIDE -- B.F. GOODRICH CHEMICAL CO.
Hydrocarbon Process. 54 (11): 214 (1975)

Flowsheet and brief description of B.F. Goodrich process for making vinyl chloride monomer and ethylene dichloride from ethylene, chlorine, and air. In 31 plants (now operating or in building throughout the world) using this process, annual capacity is 13 billion lb of ethylene dichloride and 11 billion lb of vinyl chloride.

35-0027
VINYL CHLORIDE

Anon
VINYL CHLORIDE -- PPG INDUSTRIES, INC.
Hydrocarbon Process. 54 (11): 215 (1975)

Ethylene, oxygen, chlorine and hydrogen chloride are used to make vinyl chloride monomer by the described (including flowsheet) PPG Industries process. Worldwide plants (current and near-future) using process have annual capacities of over 3.8 million lb of ethylene dichloride and 2 billion lb of VCM.

35-0028
VINYL CHLORIDE

Anon
VINYL CHLORIDE (MONSANTO CO.) -- SCIENTIFIC DESIGN CO., INC.
Hydrocarbon Process. 54 (11): 217 (1975)

Flowsheet and brief description of VCM manufacture from ethylene, chlorine, air or oxygen.

35-0029
VINYL CHLORIDE

Iammartino, Nicholas R.
PVC MAKERS MOVE TO MOP UP MONOMER EMISSIONS
Chem. Eng. 82 (25): 25-7 (24 November 1975)

Polyvinyl chloride manufacturers are bracing for the 1 April deadline of meeting OSHA's stringent standards for VC. Larger, newer plants report achieving lower than 1 ppm for most normal operations; smaller, older plants may have difficulties, especially since EPA may move to regulate VC emissions to neighborhoods near plants. One announced casualty: Uniroyal Chemical will close down its ancient Painesville, Ohio, plant. Production changes and other means taken by various companies to reduce emissions are reviewed briefly.

35-0030
VINYL CHLORIDE

Anon
POLYVINYL CHLORIDE CAPACITY GETS A BOOST
Chem. Eng. 82 (24): 123 (10 November 1975)

Firestone Plastics Co's new 50-million-lb/yr plant at Perryville, Md., makes it largest U.S. producer of PVC dispersion resins, made via a German continuous polymerization process with new spray-drying technique. Plant meets OSHA standards on VC monomer emissions: respirators may be needed in some instances. Firestone Plastics anticipates no problem in meeting EPA limits of residual monomer content of polymer product.

35-0031
VINYL CHLORIDE

Huberman, Eliezer et al
MUTATION INDUCTION IN CHINESE HAMSTER V79 CELLS BY TWO VINYL CHLORIDE METABOLITES CHLOROETHYLENE OXIDE AND 2-CHLOROACETALDEHYDE
Int. J. Cancer 16 (4): 639-44 (15 October 1975)

A dose-dependent induction of 8-azaguanine-and ouabain-resistant mutants in a mammalian cell system (Chinese hamster V79 cells) in vitro is reported for chloroethylene oxide and 2-chloroacetaldehyde, which are thought to be potentially carcinogenic metabolites of vinyl chloride in mammals. For both compounds, mutation frequency of 8-azaguanine resistance at a concentration of 6 μM was 4 or 13 times that of the control; at a concentration of 13 μM chloroethylene oxide, mutation frequency with 8-azaguanine or ouabain resistance reached 8 or 23 times, resp. Under 2.5 mM, 2 chloroethanol or monochloroacetic acid, a urinary VC metabolite in man and rats, did not induce 8-azaguanine-and ouabain-resistant mutants.

35-0032
VINYL CHLORIDE

Barbin, A. et al
LIVER-MICROSOME-MEDIATED FORMATION OF ALKYLATING AGENTS FROM VINYL BROMIDE AND VINYL CHLORIDE
Biochem. Biophys. Res. Commun. 67 (2): 596-603 (1975)

Mixtures of vinyl chloride/oxygen or vinyl bromide/air were passed through a mouse-liver microsomal system. The resulting volatile alkylating metabolites, trapped by a reaction with 4-(4-nitrobenzyl)pyridine in ethylene glycol, had absorption spectra similar to those of chloroethylene oxide and 4-(4-nitrobenzyl) pyridine. The compound, 2-chloroacetaldehyde had a different spectrum. The results indicate that both vinyl chloride and vinyl bromide are changed by microsomal enzymes into their corresponding epoxides. The latter react with 4-(4-nitrobenzyl) pyridine to give similar adducts.

35-0033
VINYL CHLORIDE
(Market)

Anon
THE VINYL CHLORIDE OUTLOOK IS BRIGHT. . .
Chem. Eng. 82 (26): 79-80 (8 December 1975)

Optimistic outlook for VC should boost demand for chlorine feedstock by 8%/yr, according to Olin Corp., which plans to have a new $100-million chlor-alkali unit onstream in 1978 at McIntosh, Alabama. New unit will boost Olin's capacity by 60%, adding 1,000 tons of chlorine and 1,100 tons of caustic.

Process to be used in Hooker Chemical's H4 diaphragm cells with resin-stabilized asbestos diaphragms.

35-0034
VINYL CHLORIDE

Anon
PVC TAGS ARE RAISED BY ROBINTECH AND TENNECO
Chem. Week 117 (24): 23 (10 December 1975)

Robintech and Tenneco Chemicals have raised PVC price to 25¢ and 24¢/lb, resp. PPG has already raised the price of VCM and Dow will push its price for the monomer up 1.6¢ to 12.6¢/lb as of 1 Jan. 1976. They will also ask an additional 1¢/lb for perchloroethylene and trichloroethylene.

35-0035
VINYL CHLORIDE

Anon
GOODRICH CUTS COST OF MEETING VCM LIMITS
Chem. Week 117 (24): 59 (10 December 1975)

B.F. Goodrich reports that it over-estimated the cost ($42 million est.) of meeting OSHA's VCM limits by 1977. Company feels this cost can be cut by 10-15% as a result of large-scale R & D effort, which has resulted in proprietary stripping and reactor cleaning techniques. Goodrich looks optimistically at industry future, predicting 40% increase (to 7 billion lb) by 1980.

See: 35-0005, Arsenic

See: 35-0018, Perchloroethylene

See: 35-0019, Perchloroethylene

35-0036
NITROSAMINES

Hasebe, Kiyoshi and Osteryoung, Janet
DIFFERENTIAL PULSE POLAROGRAPHIC DETERMINATION OF SOME CARCINOGENIC NITROSAMINES
Anal. Chem. 47 (14): 2412-8 (December 1975)

Results of the Pulse polarographic analysis of N-nitrosopyrrolidine and its derivatives, N-nitrosoproline and N-nitroso-4-hydroxyproline, in buffered solution at varying pH are discussed. The study took into account the following factors: temperature, mercury pressure, modulation amplitude, surfactant concentration, solvent and supporting electrolyte. The potential carcinogenicity, mutagenicity, or teratogenicity of some N-nitrosamines prompted the study.

35-0037
NITROSAMINES

Anon
FUEL PLANT UNDER FIRE
Chem. Week 117 (24): 21 (10 December 1975)

Maryland state health officials seek to close FMC's Baltimore rocket fuel plant following EPA findings showing 12 ppb of dimethylnitrosamine (DMN) in air near plant. FMC uses DMN, a suspected carcinogen, to make unsymmetrical dimethylhydrazine. FMC claims no reported serious illnesses from DMN at its plant. Meanwhile, EPA is sampling air near plants in Belle, W. Va., and in the Kanawha Valley. Although no nitrosamines have been detected in these areas, EPA is concerned that atmospheric nitrosamines may form from amines and nitrogen oxides.

35-0038
NITROSAMINES

Anon
POTENT MUTAGEN SYNTHESIZED AT NIH
Chem. Eng. News 53 (49): 28 (8 December 1975)

An extremely potent mutagen, a diol epoxide of benzo[a]pyrene, has been synthesized in a National Institutes of Health program seeking potential metabolites of the carcinogenic compound, benzo[a]pyrene. The new mutagen is much more active than ethyl methane sulfonate or N-methyl-N'-nitro-N-nitrosoguanidine.

35-0039
NITROSAMINES

Frantz, C.N. and Malling, H.V.
FACTORS AFFECTING METABOLISM AND MUTAGENICITY OF DIMETHYLNITROSAMINE AND DIETHYLNITROSAMINE
Cancer Res. 35 (9): 2307-14 (1975)

Dimethylnitrosamine (DMN) has been identified as a carcinogen, mutagen, and hepatoxin. Mutations from its microsomal metabolism increased linearly with time for 30 minutes of incubation in tests using *Salmonella typhimurium*. Metabolism of DMN to a mutagen may depend upon DMN demethylase activity. Hepatic dealkylation of DMN and diethylnitrosamine in rats and mice was increased by 3-MC (a standard enzyme) and phenobarbital induction.

35-0040
NITROSAMINES

Rogers, Adrienne E.
VARIABLE EFFECTS OF A LIPOTROPE-DEFICIENT, HIGH-FAT DIET ON CHEMICAL CARCINOGENESIS IN RATS
Cancer Res. 35 (9): 2469-74 (1975)

In this study in which rats were fed a marginally lipotrope-deficient, high-fat diet or an adequate diet and treated various chemicals, including N-methyl-N-nitroso-N'-nitroguanidine (MNNG), liver tumors were induced more rapidly and in greater numbers in rats on the deficient diets by N-2-fluorenylacetamide and other compounds tested. However, with MNNG there was no dietary effect on induction of gastric tumors.

35-0041
NITROSAMINES

Mohr, Ulrich et al
TRANSPLACENTAL EFFECTS OF DIETHYLNITROSAMINE IN SYRIAN HAMSTERS AS RELATED TO DIFFERENT DAYS OF ADMINISTRATION DURING PREGNANCY
J. Nat. Cancer Inst. 55 (3): 681-3 (September 1975)

Diethylnitrosamine (DEN) was administered to pregnant Syrian hamsters in a single sc dose (45 mg DEN/kg body wt) on 1 of the 15 days of pregnancy. Respiratory tract tumors occurred only in offspring of mothers who received the DEN on 1 of the last 4 days of pregnancy. The incidence rate was as high as 95%. Tumors developed, however, in the suprarenal glands, forestomach, liver and thyroid of offspring of mothers given DEN on days 1 through 11, indicating that the fetal respiratory epithelium has to attain a certain degree of differentiation to be susceptible to the carcinogenic effect of DEN.

35-0042
NITROSAMINES

Mirvish, Sidney S.
INDUCTION OF MOUSE LUNG ADENOMAS BY AMINES OR UREAS PLUS NITRITE AND BY N-NITROSO COMPOUNDS: EFFECT OF ASCORBATE, GALLIC ACID, THIOCYANATE, AND CAFFEINE
J. Nat. Cancer Inst. 55 (3): 633-6 (September 1975)

Mononitrosopiperazine (MNP), N-nitrosomorpholine (NM), and methylnitrosourea (MNU) were given to mice in varying concentrations in their drinking water. All three compounds induced lung adenomas but the adenoma yield was apparently proportional to nitrosamine concentration for NM and MNP at low concentration. At a three times greater concentration of MNU, adenoma yield rose 12.5 times.

Sodium ascorbate and gallic acid proved useful for blocking in vivo nitrosation and it is suggested that one of these compounds be administered with readily nitrosatable drugs.

35-0043
NITROSAMINES

Low, Hans
NITROSO COMPOUNDS. SAFETY AND PUBLIC HEALTH
Arch. Environ. Health 29: 256-60 (November 1974)

The properties, carcinogenicity, and the mechanism of carcinogenesis for nitroso compounds are reviewed briefly.

Man can be exposed to carcinogenic or potentially carcinogenic nitrosamines in his work, from his food, from drugs, etc. The extract from dried tobacco leaves was found to contain nitrosopiperidine. A paper published in Germany in 1967 recommended the use of the non-carcinogenic p-tolylsulfonylmethylnitrosamine instead of nitroso-methylurethane in the synthesis of diazomethane.

Nettesheim, P. et al
CARCINOGENIC AND COCARCINOGENIC EFFECTS OF INHALED SYNTHETIC SMOG AND FERRIC OXIDE PARTICLES
J. Nat. Cancer Inst. 55 (1): 159-69 (July 1975)

Syrian hamsters inhaled either synthetic smog, Fe_2O_3, or combination of the two, for 6 hr/day, 5 times/wk for life. Half of the test animals were given sc injections of diethylnitrosamine (DEN) 12 times a week (0.25 mg each dose).

Results indicated that inhaled Fe_2O_3 particles enhanced the induction of DEN cancers in the lungs, while synthetic smog did not.

Inhalation of Fe_2O_3 or synthetic smog, alone or in combination did not cause cancers in the hamsters. Pulmonary fibrosis was noted in some animals exposed to Fe_2O_3, and alveolar bronchiolization occurred in some exposed to synthetic smog.

NITROSAMINES

See: 35-0016, Hydrazine

35-0045
GENERAL INFORMATION

Wilson, Hugh H. and Johnson, Larry D.
CHARACTERIZATION OF AIR POLLUTANTS EMITTED FROM BRICK PLANT KILNS
Ceram. Bull. 54 (11): 990-1, 994 (1975)

Atmospheric emissions from four U.S. brick plants were analyzed and the major pollutants were determined to be sulfur dioxide, sulfur trioxide, and fluorine. Other emissions in the stack gases were nitrogen oxides, chlorine, and particulates. Except for the SO_2 emissions at one plant, the emissions were not found to be of a magnitude to cause environmental concern.

35-0046
GENERAL INFORMATION

Martin, J.H. and Broenkow, W.W
CADMIUM IN PLANKTON: ELEVATED CONCENTRATIONS OFF BAJA CALIFORNIA
Science 190 (4217): 884-5 (28 November 1975)

Analysis of the cadmium content of 135 plankton samples from the northeast Pacific Ocean showed relatively low concentrations, ranging from 2 to 5 micrograms of Cd/g, dry weight. One exception: from 10 to 20 ppm of Cd were detected in plankton collected off Baja California.

35-0047
GENERAL INFORMATION

Anon
A NEW PROCESS FOR RECOVERING ANTIMONY FROM ORE CONCENTRATES. . .
Chem. Eng. 82 (25): 18 (24 November 1975)

Asarco Inc. will smelt its antimony ore concentrates in a reverberatory-type furnace in its $7-million El Paso refinery, which should be on stream at end of 1976, producing 5 tons Sb/day.

Although Asarco is claiming a new process, available information indicates a conventional method. After the concentrates are smelted, a metallic mixture will be continuously tapped and granulated. The granules will be dissolved in an unnamed solvent and the Sb will be removed electrochemically.

35-0048
GENERAL INFORMATION

Anon
EFFECT OF TRACE METALS ON SEA LIONS PROBED
Chem. Eng. News 53 (46): 34 (17 November 1975)

Ocean pollutants seem to be having an effect on sea lions and other marine life. The premature pupping noticed in sea lions could be caused by an imbalance among mercury, selenium, and bromine in mother seals. A higher ratio of selenium to mercury in the affected seals and a lower level of bromine in their livers may be responsible.

DDT concentrations are lower in crabs, mussels and other marine animals in the Pacific Ocean but remain high in fish living on the bottom near DDT-contaminated sediments, indicating potential hazards for some time yet from eating Dover sole or other contaminated bottom fish. DDT-caused fin rot has been observed in some fish.

35-0049
GENERAL INFORMATION

Anon
PCB SUBSTITUTE IS SAFE FOR ENVIRONMENT
Chem. Eng. News 53 (49): 7 (8 December 1975)

Dow Chemical and McGraw Edison announce an environmentally safer PCB substitute, a butylated monochlorodiphenyl oxide. The new material, which is said to be more biodegradable, less bioconcentratable, and less toxic to fish than the PCB's, will be used in McGraw Edison's capacitors starting in mid-1976.

35-0050
GENERAL INFORMATION

Anon
LEAD BUILDUP IN HUMANS MAY RESULT FROM EXPOSURE TO AUTO EXHAUST EMISSIONS
Chem. Week 117 (24): 59 (10 December 1975)

Southwest Research Institute reports that lead levels in the blood were higher (over 40 micrograms/100 ml) in people living along a busy freeway than in those living in desert areas. Apparently, lead builds up in bodies of those exposed to high concentrations of automotive exhausts.

36-0001
ARSENIC

Ember, Lois
THE SPECTER OF CANCER
Environ. Sci. Technol. 9 (13): 1116-21 (December 1975)

A review of programs underway and those needed to control and prevent the environmentally-caused diseases, which are considered increasing, is given. National Cancer Institute (NCI)'s analytical studies and list of 32 carcinogenic substances; EPA's interest; the Registry of Tumors in Lower Animals; the need for data and for information on the potential hazards of the more then 200,000 chemicals of commerce available, e.g., a National Environmental Banking System, NIOSH activities, and several problem areas are discussed. Carcinogens such as arsenic, asbestos, benzene, benzidine, bis(chloromethyl) ether, cadmium oxide and sulfate, chromium compounds, nickel compounds, soot and tars, stilbestrol, naphthylamines, vinyl chloride, etc; are mentioned.

Rajhans, G.S. and Bragg, G.M.
A STATISTICAL ANALYSIS OF ASBESTOS FIBER COUNTING IN THE LABORATORY AND INDUSTRIAL ENVIRONMENT
Am. Ind. Hyg. Assoc., J. 36 (12): 909-15 (1975)

Measuring airborne asbestos fibers by the membrane filter method is relatively standardized and, according to the authors, sufficiently precise for industrial measurements. A detailed discussion of the reproducibility of standard fiber counts in the laboratory and four industrial plants is given. Standard deviations varied from 0.4 to 1.2f/ml for the results under field conditions and were approximately 0.2f/ml for the counts under ideal laboratory conditions.

ASBESTOS

See: 36-0001, Arsenic

See: 36-0001, Arsenic

Anon
NEW METALLIC GLASSES HAVE BETTER HARDNESS AND MAGNETIC PROPERTIES
Chem. Week 117 (25): 27 (December 1975)

New ferrous metallic glasses from boron and iron with improved hardness and magnetic properties has been developed by the Materials Research center of Allied Chemical. These new alloys extend the temperature range in which the metallic glasses can be used. Potential applications include reinforcing elastomers and plastics, cutlery, corrosion-resistant cable, magnetic transformer cores, magnetic shields, and tape recording heads.

Anon
OSHA COMPLETES TECHNICAL DRAFTS FOR 18 TOXIC SUBSTANCES
Job Saf. Health Rep. 5 (23): 230 (17 November 1975)

Dioxane is one of 18 toxic substances for which OSHA announced in the November 4, 1975 Federal Register that draft technical standards have been prepared and are available at OSHA, U.S. Dept. of Labor, Room N3620, 200 Constitution Ave. N.W., Washington, D.C. 20210 or at OSHA regional offices.

36-0005
FLAME RETARDANTS

Orphanides, Gus G.
FOREIGN TECHNOLOGY CONCERNING FIRE SAFETY ASPECTS OF POLYMERIC MATERIALS
Army Foreign Science & Technol. Center, Charlottesville Va. 1 April 1974, 49 p.
Rep. NO. FSTC-CWn01-110-74

This working paper presents the salient features of the foreign technology concerning fire safety aspects of polymeric materials. It describes the current state of foreign test methods, of foreign contributions to the understanding of fire dynamics, and of foreign organic fire resistant polymers. Particular attention is paid to developments in the United Kingdom. France, West Germany, Japan, and the Soviet Union.

[Abstract in: Government Reports Announcements 75 (9): 147-8 (2 May 1975)

36-0006
FLAME RETARDANTS

Anon
CPSC WAIVES TESTING ON UM & M SLEEPWEAR
Text. World 125 (12): 23 (December 1975)

The all-cotton children's sleepwear fabric Wonderama of United Merchants and Mfrs. (U.M.&M.), finished with Fire Stop, a tetrakis hydromethyl phosphonium chloride (THPC)- derived finish, developed jointly by U.M.&M. and Cotton, Inc., received a Consumer Product Safety Commission (CPSC) waiver for multiple laundering testing requirements. A statistical study by U.M.&M. showed 99.31% conformance to CPSC standards following 50 home launderings and tumble dryings and was based on the previous 3.8 million yd. production.

36-0007
FLUOROCARBONS

Symons, James M. et al
NATIONAL ORGANICS RECONNAISSANCE SURVEY FOR HALOGENATED ORGANICS
J. Am. Water Works Assoc. 67 (11): part 1 634-47 (November 1975)

A National Organics Reconnaissance Survey (NORS) of 80 U.S. cities was conducted by EPA to determine the extent and presence of the four trihalomethanes -- chloroform (trichloromethane), bromodichloromethane, dibromochloromethane, bromoform (tribromomethane), 1,2-dichloroethane, and carbon tetrachloride in finished water and the effect raw-water source and water-treatment practices have on the formation of these compounds. Due to chlorination, the four trihalomethanes were found widely in U.S. drinking waters but were absent or present only in low concentrations in the raw waters tested. Carbon tetrachloride was not found in the raw water of 95% of the locations tested nor 87.5% of the finished waters tested with 3μg/1 being the highest concentration found. Similarly 1,2-dichloroethane was not found in the raw water of 86% of the locations tested nor 67.5% of the finished waters tested with the highest concentration being 6μg/1.

36-0008
FLUOROCARBONS

Bohning, D.E. et al
EFFECTS OF FLUOROCARBONS 11 AND 12 ON TRACHEOBRONCHIAL PARTICLE DEPOSITION AND CLEARANCE IN DONKEYS
Am. Ind. Hyg. Assoc., J. 36 (12): 902-8 (1975)

After exposure to 1000 ppm fluorinated hydrocarbons (F-11 and F-12) separately and in a 50/50 mixture, alterations in tracheobronchial particle deposition or clearance in donkeys due to the fluorocarbon exposures were studied for the FC11 tests mean concentration was 1015 ± 86 ppm and for the FC12 tests mean concentration was 1091 ± 90 ppm. FC11 concentration was 487 ± 46 ppm and FC12 concentration was 598 ± 47 ppm for the mixture. Regional particle deposition or mucocilliary clearance rates in donkeys were not significantly altered by the exposure to FC-11 and FC-12 for up to six hours. Furthermore, 13 months of intermittent exposure to fluorocarbons, amounting to approximately 114 hours per animal, showed no cumulative residual effects on retention levels and clearance rates.

36-0009
FLUOROCARBONS

Anon
REPORT CITES EFFECTS OF FLUOROCARBON BAN
Chem. Eng. News 53 (50): 8 (15 December 1975)

A report entitled, "Preliminary Economic Impact Assessment of Possible Regulatory Action to Control Atmospheric Emissions of Selected Halocarbons", was prepared for EPA by Arthur D. Little, Inc. Ten primary industry sector affected in some way by any restriction on the production or emission of chlorofluorocarbons (F-11, F-12 and F-22) and chlorocarbons (carbon tetratrachloride and methyl chloroform) are identified according to impact of regulation and implementation time.

36-0010
FLUOROCARBONS

Evans, Joseph E. and Arnold, James T.
MONITORING ORGANIC VAPORS
Environ. Sci. Technol. 9 (13): 1134-38 (December 1975)

A portable mass spectrometer for field use in detecting organic vapors in the parts per billion (ppb) range has been developed for monitoring ambient and workplace air environments. The U.S. Army Environmental Hygiene Agency is already using the portable vapor detection system. A representative list of compounds being monitored on a daily basis includes chloroform, carbon tetrachloride, bis-chloromethyl ether, dichloromonofluoromethane, formaldehyde, hexachloroethane, methyl isobutyl ketone, β-naphthylamine, vinyl chloride, etc. Sensitivity for perchloroethylene in ambient air with the portable vapor detector has a lower detection limit of <0.1 ppb <0.1 ppb (> 0.7 ugm^{3}) at 164 MW.

36-0011
FLUOROCARBONS

Anon
MORE BAD NEWS FOR CHLOROFLUOROCARBONS
Chem. Eng. News 53 (51): 5 (22 December 1975)

Balloon-borne measurements in the stratosphere over New Mexico show concentrations of chlorofluorocarbons CF-11 and CF-12 more than doubled since 1968 with concentrations decreasing with increasing height. The concentration of F-11 at 18.5 km was 49 ppt compared to 20 ppt in 1968 and 160 ppt vs. 50 to 60 ppt F-12 in 1968. The average annual increase of halomethane levels averaged about 14% which corresponds to the increase of the world's fluorocarbon use.

36-0012
FLUOROCARBONS

Anon
A BILL RESTRICTING THE USE OF FLUOROCHLOROCARBON COMPOUNDS IN AEROSOL SPRAY CANS. . .
Environ. Sci. Technol. 9 (13): 1106 (December 1975)

A New York state law has been passed and signed, directing the Commissioner of the Department of Environmental Conservation to promulgate labeling, restrictions and distribution rules and regulations concerning the use of fluorochlorocarbons in aerosol spray cans by January 1, 1976. Second only to Oregon in passing such a bill, N.Y. will implement restrictive use by January 1, 1978.

HALOETHERS

See: 36-0010, Fluorocarbons

HALOETHERS

See: 36-0001, Arsenic

36-0013
HYDRAZINE

Anon
POLLUTION THREATENS CLOSING OF FMC PLANT
Chem. Eng. News 53 (50): 7 (15 December 1975)

FMC uses dimethylnitrosamine (DMNA) as an intermediate in the production of unsymmetrical dimethylhydrazine, a rocket fuel for the Air Force. The office of Maryland's Secretary of Health and Mental Hygiene issued a violation notice to the FMC plant in regard to the release of detectable quantities of the toxic DMNA and ordered the plant be shut down until corrective measures were taken in its emission control system. Analytical measurements of the air surrounding the plant last summer and fall showed concentrations of DMNA ranging from 0.3 to 12 ppb.

36-0014
HYDRAZINE

Anon
FMC WILL SHUT DOWN THE PART OF ITS BALTIMORE PLANT CITED IN AIR POLLUTION CHARGES. .
Chem. Eng. News 53 (51): 10 (22 December 1975)

The Baltimore plant of FMC will stop making the rocket fuel unsymmetrical dimethylhydrazine no later than April 1 when present contracts expire. There are 23 employees involved in the closing. State and city charges of dimethylnitrosamine air pollution around the plant led to the charges although there has been no evidence of health damage. (See: CATS *36-0013, Hydrazine).

See: 36-0023, Polyurethanes

Iowa State Univ. of Science and Technology, Ames.
COAL PROCESSING BY ELECTROFLUIDICS
Interim Rep. March/August 1974. January 1975, 133p. OCR-30-INT-3
Contract DI-14-01-0001-479

Summarized in the report are the results of research on the electrical characteristics of electrofluid reactors. Since the total resistance between electrodes placed in a fluidized bed includes both a contribution from the resistance of the bed and the electrode-to-bed contact resistance, measurements have been made of the total bed and contact resistances. Also reported are studies of arcing in the electrofluid reactor and a summary of methods for predicting the electrical properties of such systems.

[Abstract in: Government Reports Announcements 75 (9): 58 (2 May 1975)]

Wyoming Univ., Laramie
THE DIRECT PRODUCTION OF HYDROCARBONS FROM COAL-STEAM SYSTEMS
Final Rep. November 1968-November 1973, January 1975, 87p. OCR-80-F
Contract DI-14-01-0001-1196. Paper copy also available from GPO as C.1163.10:80

Experiments were carried out on the use of a multiple catalyst system consisting of potassium carbonate and a commercial nickel methanation catalyst for the direct production of methane from coal-steam reactions. This system combines the effects of these catalysts to produce in a single-step conversion a product gas consisting primarily of methane and carbon dioxide with a CO2-free heating value as high as 850 Btu per SCF, Two of the apparent problems inherent with such a system were catalyst recovery and the loss of catalyst activity over prolonged periods of time at the conversion temperatures in the presence of the various reactants produced from the coal gasification. In conjunction with the latter problems, experiments were also performed on the influence of sulfur compounds produced during gasification upon catalyst life and activity.

[Abstract in: Government Report Announcements 75 (9): 59 (2 May 1975)

See: 36-0023, Polyurethanes

36-0017
MODEL ECOSYSTEMS

Lassiter, Ray R.
MODELING THE DYNAMICS OF BIOLOGICAL AND CHEMICAL COMPONENTS OF AQUATIC ECOSYSTEMS
Environmental Protection Agency, Athens, Ga. Southeast Environmental Res. Lab.
May 1975, 62p. EPA/660/3-75-012 PB-241 987/7WJ PC$4.25/MF$2.25

To provide capability to model aquatic ecosystems or their sub-systems as needed for particular research goals, a modeling strategy was developed. Submodels of several processes common to aquatic ecosystems were developed or adapted from previously existing ones.

[Abstract in: NTIS Weekly Government Abstracts, Medicine and Biology (8 December 1975)

36-0018
MODEL ECOSYSTEMS

National Ecological Res. Lab., Corvallis, Oreg.
A CONCEPTUAL MODEL FOR THE MOVEMENT OF PESTICIDES THROUGH THE ENVIRONMENT:
A CONTRIBUTION OF THE EPA ALTERNATIVE CHEMICALS PROGRAM.
Final Rep.. James W. Gillet, James Hill, IV, Alfred W. Jarvinen, and W. Peter Schoor. December 1974, 89p. EPA/660/3-74/024

The report represents a conceptual model of the movement and disposition of pesticides in the environment. A multi-media model is built up from simple modules representing basic processes and components of air, soil, and water. More specific models are exposited for the atmospheric/terrestrial, freshwater aquatic, and estuaring/marine environments. Ultimately systems analysis and mathematical simulation techniques can be employed to evaluate the fate of a specific chemical in a partcular environment. The conceptual model is thus a first step in organizing facts, assumptions, and hypotheses into a graphic and logical arm capable of exploitation in further experimentation of pesticide disposition and effects. A multi-media approach to disposition studies is made explicit even in the absence of a single all-media global model.

[Abstract in: Government Reports Announcements 75 (9): 124 (2 May 1975)]

Pielou, E.C.
SPECIES ABUNDANCE PATTERNS
Science 190 (4219):1086 (12 December 1975)

The author reviews the mathematical aspects of ecological diversity in a given place and likely species-abundances. Methods for testing hypotheses against relevant data are also discussed.

See: 36-0010, Fluorocarbons

See: 36-0010, Fluorocarbons

36-0020
PHTHALATES

Liu, Benjamin Y.H. and Lee, K.W.
AN AEROSOL GENERATOR OF HIGH STABILITY
Am. Ind. Hyg. Assoc., J. 36 (12): 861-65 (1975)

A new approach, which uses a syringe pump to provide a constant liquid flow to an atomizer results in an aerosol generator of exceptionally high stability. In addition, Di-octyl phthalate (DOP) aerosols have also been produced by this syringe-pump atomizer used with a vaporizer and condenser. This system is simple, flexible, and easy to operate, making it a useful device for aerosol research.

36-0021
PHTHALATES

Anon
FMC HANGS OUT A LONG LINE OF PRICE HIKES
Chem. Week 117 (26): 18 (24 December 1975)

As of January 1, FMC's Industrial Chemical Division will increase the price of diallyl phthalate in bulk, tank truck to 75¢/lb; diallyl isophthalate to $1.45/lb., truck load; diallyl maleate in 480-lb. net weight drums to $1.30/lb.

36-0022
PHTHALATES

Anon
BASF WYANDOTTE UPPING PLASTICIZER CHEMICAL PRICES
Chem. Week 117 (26): 18 (24 December 1975)

The price of molten phthalic anhydride will increase 2¢/lb. to 26¢ f.o.b. South Kearny, N.J., as of January 1, according to BASF Wyandotte. Other plasticizer chemicals will raise their prices also, i.e., palatinol dioctyl phthalate to 27.5¢/lb and diisodecyl phthalate to 28¢.

36-0023
POLYURETHANES

Pentz, William J. and Krawiec, Robert G.
HYDROLYTIC STABILITY OF POLYURETHANE ELASTOMERS
Rubber Age 107 (12): 39-43 (1975)

This paper is the third in a continuing study of investigation to determine property differences of various polyurethane elastomers. The first two treated the low temperature properties of certain eleastomers while the third measures relative retention of elastomeric properties in a hydrolysis aging study of some polyethers and polyesters with several diisocyanate-curative systems. The selection of the appropriate diisocyanate-curative system for a polyether diol is important for resistance to hydrolytic degradation but much less so for a polyester diol.

36-0024
POLYURETHANES

Frisch, K.C. and Reegen, S.L.
ADVANCES IN URETHANE SCIENCE AND TECHNOLOGY
Rubber Age 107 (12): 77-8 (1975)

Eleven major reports on urethane chemistry and polymerization by leading authorities in the field are presented. Production processes and product application are included with foreign urethane techniques and an up-to-date bibliography.

36-0025
TRICHLOROETHYLENE

Anon
THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA). . .
Environ. Sci. Technol. 9 (13): 1105 (December 1975)

OSHA has proposed health standards for trichloroethylene.

36-0026
TRICHLOROETHYLENE

Anon
TRICHLOROETHYLENE INVESTIGATED. . .
Am. Ind. Hyg. Assoc., J. 36 (12): A-7 (1975)

The Manufacturing Chemists Association is administering a research study for Canadian Industries Ltd., Diamond Shamrock, Dow, Ethyl, Hooker and PPG, the focus of which will be trichloroethylene. Long term inhalation testing will be performed and the occupational aspects of the chemical's use in dry cleaning, degreasing, printing inks, coatings and adhesives will be studied.

36-0027
VINYL CHLORIDE

Environmental Protection Agency, Washington, D.C. Office of Toxic Substances
PRELIMINARY ASSESSMENT OF THE ENVIRONMENTAL PROBLEMS ASSOCIATED WITH VINYL CHLORIDE AND POLYVINYL CHLORIDE
Interim Rep. September 1974, 106p. EPA/560/4-74-001 PB-239 110/OGA

The report summarizes the activities and findings of a task force to assess the character and extent of the problems associated with the production, distribution, use, and disposal of vinyl chloride and polyvinyl chloride. The first Section discusses the nature and magnitude of problems. The second discusses previous and planned activities within the Federal Government of particular significance and the role of industry. The report concludes with some specific recommendations.

[Abstract in: Government Reports Announcements 75 (9): 126-7 (2 May 1975)]

36-0028
VINYL CHLORIDE

Cuddeback, John E. et al
PERFORMANCE OF CHARCOAL TUBES IN DETERMINATION OF VINYL CHLORIDE
Environ. Sci. Technol. 9 (13): 1168-71 (December 1975)

An examination of the performance parameters of the charcoal tube absorption method as an analytical sampling device for airborne vinyl chloride was undertaken and is described in this article. The capacity of a 100 mg portion of activated charcoal in a sampling tube is shown to be at least 65 μg. The authors point out that this method is adequate for concentrations of 1-50 ppm or more but as the concentrations of vinyl chloride monomer (VCM) decrease, scatter in the data and sample losses greatly affect analytical accuracy. The methodology by which a 90% recovery of vinyl chloride was obtained even following a two week sample storage is also described.

36-0029
VINYL CHLORIDE

Anon
GOODRICH MEETS VINYL CHLORIDE SAFETY RULES
Chem. Eng. News 53 (50): 14 (15 December 1975)

B.F. Goodrich is the number one PVC producer with about 20% of the U.S. market of 3.5 billion lb. this year. Not only are the company's five PVC plants operating well within OSHA rules, but the company's President states, "We are now supplying PVC resins and compounds with such minute content of residual vinyl chloride that the possibility of vinyl chloride exposure from their processing or use is virtually eliminated".

36-0030
VINYL CHLORIDE

Anon
NEW VCM PLANT PLANNED
Chem. Week 117 (25): 17 (17 December 1975)

Diamond Shamrock has plans to build and operate a 1 billion-lbs/year vinyl chloride monomer (PVC) plant at its LaPorte, Texas complex, thereby giving the company a fully integrated production complex ranging from chlorine to PVC. The Texas Air Control Board (TACE) has been asked to grant a permit for the project. Tenneco Chemicals has requested permission to expand its new 250-million lbs/year capacity plant at Pasadena, Texas.

36-0031
VINYL CHLORIDE

Anon
CLEARING THE AIR
Chem. Week 117 (26): 10 (24 December 1975)

EPA's proposed standards for vinyl chloride are expected to reduce plant emissions by 90% at a cost of $198 million to meet the standards for existing facilities and an operating cost of $70 million/year. This EPA program would require manufacturers of vinyl chloride, PVC and ethylene dichloride to reduce stack and "fugitive" source emissions to 10 ppm and install the best available technology appropriately in the production process with controls in place 90 days after final ruling. The EPA emphasizes a potential cancer risk to 4.6 million persons living within five miles of the 56 plants which emit an estimated 100 million kilograms/yr.

VINYL CHLORIDE

See: 36-0001, Arsenic

See: 36-0010, Fluorocarbons

NITROSAMINES

See: 36-0014

NITROSAMINES

See: 36-0013

36-0032
GENERAL INFORMATION

Zapp, J.A., Jr.
INHALATION TOXICITY OF HEXAMETHYLPHOSPHORAMIDE
Am. Ind. Hyg. Assoc., J. 36 (12): 916 (1975)

A summary report from DuPont highlights concern over increasing use of hexamethylphosphoramide (HMPA) as a solvent with exceptional power, as an effective chemisterilant for a number of insect pests, etc. Although acute toxicity of HMPA for experimental animals is low to moderate by ingestion, inhalation, skin absorption and as a skin irritant, chronic toxicity of HMPA is more severe. Experimental study of HMPA and nasal tumors in rats carried out by DuPont is described briefly The author concludes that "There appears to be no doubt that this rare form of cancer has been produced in rats by inhalation exposure to HMPA in a concentration as low as 400 ppb (analytical) in a period of about eight months." Precautions appropriate to a potential carcinogen are urged.

36-0033
GENERAL INFORMATION

Lloyd, William J.
HEXAMETHYLPHOSPHORIC TRIAMIDE (HMPA)
Am. Ind. Hyg. Assoc., J. 36 (12): 917 (1975)

As a result of the information reported to the National Institute for Occupational Safety and Health (NIOSH) by DuPont (see: CATS 36-0032) regarding potential risk of human exposure to hexamethylphosphoric triamide (HMPA), NIOSH is advising the occupational health community of these findings. This paper provides background material on HMPA prepared by the Office of Occupational Health Surveillance and Biometrics, NIOSH, for information purposes.

36-0034
GENERAL INFORMATION

Anon
GE ADMITS 65 EMPLOYEES SUFFERED FROM FROM PCB EXPOSURE OVER 15-YEAR PERIOD
Job Saf. Health Rep. 5 (23): 227 (17 November 1975)

According to GE spokesmen, 49 of about 1800 employees working in areas exposed to PCBs complained of allergic dermatitis and an additional 16 reported nausea, dizziness, eye and/or nasal irritation, asthmatic bronchitis and fungus. Testimony was held at a public hearing in Albany, N.Y. as a result of a complaint filed in the N.Y. Dept. of Environmental Conservation that GE violated state water quality standards by dumping PCBs into the Hudson River from its plants in Ft. Edward and Hudson Falls, N.Y., during the manufacture of capacitors.

36-0035
GENERAL INFORMATION

Anon
CHEMICAL POLLUTANTS: POLYCHLORINATED BIPHENYLS STILL A THREAT
Science 190 (4220) 1189 (19 December 1975)

Despite voluntary controls by manufacturers and users of polychlorinated biphenyls, the total amount of PCB's in the environment appears to have increased substantially. EPA states that despite the hazards of PCB's, until the Toxic Substances Control Act is passed, EPA has no power to restrict or prevent production, etc.

See: 36-0031, Vinyl chloride

37-0001
ACRYLONITRILE
(Production)

Kiefer, David M.
RISING DEMAND WILL SPUR SALES AND EARNINGS
Chem. Eng. News 53 (51): 26-7, 30 (22 December 1975)

The 13 to 15% drop in output of industrial chemicals and synthetics in 1975, compared to 1974, should take a healthy upswing in 1976, if the general economy continues strong. Among organic chemicals, acrylonitrile production, which dropped to 1.25 million lb in 1975 from about 1.4 million lb in 1974, is expected to rise to 1.6 million lb in 1976; perchloroethylene should rise to 800,000 lb in 1976, having dropped to 680,000 lb in 1975 from 733,000 in 1974. Among plastics, PVC production, which dropped from 4.85 million lb in 1974 to 3.75 million lb in 1975, is expected to reach 5.45 million lb in 1976.

37-0002
ACRYLONITRILE

Anon
COATERS CHECK ON CHEMICAL LINE-UP
Can. Chem. Process. 59 (11): 30-2 (1975)

Canadian papermakers are taking a new look at coating chemicals. Among possibilities: use of asbestos fiber as a filler, despite current concern of asbestos hazards, and use of Dow's Saran microspheres, which are copolymers of vinylidene chloride and acrylonitrile, as substitutes for titanium dioxide.

37-0003
ARSENIC

Johnson, David L. and Braman, Robert S.
ALKYL- AND INORGANIC ARSENIC IN AIR SAMPLES
Chemosphere 4 (6): 333-8 (December 1975)

Tests conducted in the Tampa Bay, Florida, area showed the presence of inorganic arsenic, dimethylarsine and trimethylarsine, but no methylarsine, in the air. The sources of the various forms of arsenic in the air are probably non-biological processes as well as biological processes. It is possible that vapor phase alkyl-arsenic/particle reactions are a natural mechanism for arsenic enrichment in aerosol samples.

37-0004
ASBESTOS

Anon
ASBESTOS/MEASURING TECHNIQUE
Environ. Rep. 6 (15): 116 (9 December 1975)

An X-ray diffraction technique under development by the U.S. Naval Research Laboratory may be cheaper and faster than electron microscopy as a means of measuring submicrogram amounts of asbestos in air or water.

37-0005
ASBESTOS

Anon
AIRBORNE PARTICLE SAMPLER
Environ. Rep. 6 (16): 125 (19 December 1975)

A prototype device developed at Stockholm University detects potentially harmful particles, such as lead and asbestos, in air and traces their fluctuations for seven days.

37-0006
ASBESTOS

Lavappa, K.S. et al
CYTOGENIC STUDIES ON CHRYSOTILE ASBESTOS
Environ. Res. 10 (2): 165-73 (1975)

For *in vivo* tests, certain monkeys were fed 100 or 500 mg/kg of chrysotile in cookies, while others were injected twice i.p. or gavaged twice with 0.2, 2, 20, and 200 mg/kg chrysotile. The *in vitro* tests were performed using hamster embryo cultures.

No noticeable chromosome aberrations were observed in the bone marrow cells of the monkeys used in the *in vivo* tests, but a dose-related increase in the incidence of chromatid gaps and breaks occurred in the embryo cells used in the *in vitro* tests.

37-0007
ASBESTOS

Morgan, A. et al
STUDIES ON THE DEPOSITION OF INHALED FIBROUS MATERIAL IN THE RESPIRATORY TRACT OF THE RAT AND ITS SUBSEQUENT CLEARANCE USING RADIOACTIVE TRACER TECHNIQUES
Environ. Res. 10 (2): 196-207 (1975)

In accordance with the recommendation of the Advisory Committee on Asbestos Cancers that more should be learned about the deposit and retention of inhaled asbestos fibers, rats were exposed to the UICC standard reference samples for 30 minutes.

From 31 to 68% of the inhaled fibers were deposited and about 17% was retained in the lower respiratory tract. From autoradiographs of lung sections it appeared that fibers were located in the conducting airways, especially at bifurcations, and were distributed fairly uniformly throughout the alveolated regions.

37-0008
ASBESTOS

Amacher, D.E. et al
THE DOSE-DEPENDENT EFFECTS OF INGESTED CHRYSOTILE ON DNA SYNTHESIS IN THE GASTROINTESTINAL TRACT, LIVER, AND PANCREAS OF THE RAT
Environ. Res. 10 (2):208-16 (1975)

Because asbestos fibers have been detected in drinking water and asbestiform fibers in certain foods and beverages, adult rats were given from 0.5 to 100 mg/kg chrysotile and later examination indicated a limited dose-dependent effect on [^{3}H]thymidine incorporation in the gastrointestinal tract. Chrysotile in the 5-50 mg/kg dose range most effectively enhanced [^{3}H]thymidine incorporation in the stomach, duodenum, and jejunum. Apparently, chrysotile can be physicochemically altered by gastric acid and this may be a factor on the effects of chrysotile on DNA synthesis.

37-0009
ASBESTOS

Bruckman, Leonard and Rubino, Robert A.
ASBESTOS: RATIONALE BEHIND A PROPOSED AIR QUALITY STANDARD
J. Air Pollut. Control Assoc. 25 (12): 1207-15 (1975)

The authors propose an ambient air quality asbestos standard of 30 nanograms/cu m, based on a 30-day average sample and discuss their reasons briefly. On pp. 1212-4, L.A. Plumlee indicates that for certain reasons, including the fact that the authors base their standards only on the risk of mesothelioma the proposed standards are not supportable. Bruckman and Rubino refute Plumlee's charges on pp. 1214-5.

See: 37-0002, Acrylonitrile

37-0010
FLUOROCARBONS

Paulet G. et al
FLUOROCARBONS AND GENERAL METABOLISM IN THE RAT, RABBIT, AND DOG
Toxicol. Appl. Pharmacol. 34 (2): 197-203 (November 1975)

Rabbits and dogs inhaled monofluorotrichloromethane (FC 11) and difluorodichloromethane (FC 12) for one 20-minute period. Exposures were as follows: FC 11: 5%, FC 12: 20%, and FC 11/FC 12 (10/90): 20% or 50%.

In another series of tests, rats and rabbits inhaled the fluorocarbons for two 1-hr periods/day for 15 days. In both series of tests, all mixtures contained 20% oxygen.

Significant metabolic effects were noted only with FC 11 at 5%, which caused a decrease in oxygen uptake, hyperglycemia and hyperlactacidemia, and several other effects apparently due to a slowing down of cellular oxidation.

37-0011
FLUOROCARBONS

Paulet G. et al
FATE OF FLUOROCARBONS IN THE DOG AND RABBIT AFTER INHALATION
Toxicol. Appl. Pharmacol. 34 (2): 204-13 (November 1975)

To determine the distribution and fate in the body of inhaled fluorocarbons, dogs and rabbits were exposed to monofluorotrichloromethane (FC 11) in concentrations of 2.5 and 5%, to dichlorodifluoromethane (FC 12) in concentrations of 20 and 50%, and to a 10/90 mixture of FC 11/FC 12 in concentrations of 25 and 90%.

Both compounds diffused rapidly into the blood, the cerebrospinal fluid (CSF), the urine and the bile in concentrations governed by the concentration inhaled. The gases were completely eliminated from the body 20-50 minutes after fresh air was inhaled. Elimination was primarily via the pulmonary system rather than via the bile or urine.

37-0012
FLUOROCARBONS

Zafonte, L. et al
BACKGROUND AND VERTICAL ATMOSPHERIC MEASUREMENTS OF FLUOROCARBON-11 AND FLUOROCARBON-12 OVER SOUTHERN CALIFORNIA
Atmos. Environ. 9 (11): 1007-9 (1975)

Background concentrations of FC-11 (CCl_3F) and FC-12 (CCl_2F_2) in air collected at ground level to 22,000 ft over the Southern California area were 0.060 and 0.090 ppb, respectively. Ozone concentrations were measured at the same time. It appears that FC-11 and FC-12 can serve as polluted air tracers below the inversion layer.

37-0013
FLUOROCARBONS

Grimsrud, E.P. and Rasmussen, R.A.
THE ANALYSIS OF CHLOROFLUOROCARBONS IN THE TROPOSPHERE BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY
Atmos. Environ. 9 (11): 1010-13 (1975)

A gas chromotograph linked directly to a mass spectrometer was more sensitive than the electron capture detector in measuring CF_2 Cl, particularly, and $CFCl_3$ in rural atmospheres, according to tests conducted in the Pacific Northwest served. The technique permits detection of 5 ppt in 20 cm^3 air samples. Results showed concentrations of about 230 ± 8 ppt of CF_2 Cl_2 and 128 ± 5 ppt of $CFCl_3$ in several areas, with little variations in these concentrations in ambient air and up to 12,000 ft above sea level.

37-0014
FLUOROCARBONS

Grimsrud, E.P. and Rasmussen, R.A.
SURVEY AND ANALYSIS OF HALOCARBONS IN THE ATMOSPHERE BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY
Atmos. Environ. 9 (11): 1014-17 (1975)

The use of gas chromatography linked with mass spectrometry to determine the presence of 19 simple halocarbons in the atmosphere of our rural Northwest as part of a study to define the roles of chlorofluorocarbons and chlorocarbons as carriers of chlorine in the troposphere.

Methyl chloride, previously unreported, was detected in high concentration, 530 ± 30 ppt. Tetrachloroethylene (perchloroethylene) was found in concentrations of 20 ± 10, but trichloroethylene was not found in detectable amounts. Relatively high concentrations of chlorofluorocarbons were detected.

37-0015
FLUOROCARBONS

Rowland, F.S. et al
NATURAL HALOCARBONS IN AIR AND SEA
Nature 258 (5537): 775-6 (25 December 1975)

The authors refute the theory of J.E. Lovelock [Nature, 256, 193 (1975)] about the concentration and stability of CH_3Cl in the stratosphere, arguing that the methyl chloride has a short atmospheric life-time (compared to CCl_3F) and that CH_3Cl should be now present at a steady level.
Lovelock responds that he may be mistaken about the rapidity of destruction of CH_3Cl in the stratosphere but argues that CH_3Cl, which has been measured only during the last 10 months, may vary in its concentration.

37-0016
FLUOROCARBONS

Hanst, Philip L. et al
INFRARED MEASUREMENT OF FLUOROCARBONS, CARBON TETRACHLORIDE, CARBONYL SULFIDE, AND OTHER ATMOSPHERIC TRACE GASES
J. Air Pollut. Control Assoc. 25 (12): 1220-6 (1975)

For proper measurement of air pollutants by infrared absorption spectroscopy, the pollutants should be concentrated by separating them from nitrogen, oxygen, water vapor, and even from CO_2. In this study, cryogenic condensation followed by distillation, combined with a chemical step to absorb CO_2, was used to concentrate the pollutants. Measured at 3 locations, background concentrations of trichlorofluoromethane (F-11) ranged from 1.2×10^{-10} atm to 7.4×10^{-10} atm, confirming that F-11 is now emitted more than carbon tetrachloride as a result of human activities. Dichlorodifluoromethane (F-12) and perchloroethylene concentrations are also discussed.

37-0017
FLUOROCARBONS

Anon
AEROSOL BAN REJECTED
Chem. Week 118 (1): 14 (7 January 1976)

Basing its decision on the fact that the ozone theory has not yet been proved, the Consumer Product Safety Commission rejected a petition by Los Angeles to ban fluorocarbon-propelled aerosol products. Earlier, CPSC rejected a similar petition by the Natural Resources Defense Council, and probably will not act on a second NRDC petition until NAS publishes the results of its study on this topic in April 1976. On the other hand, EPA wants pesticide makers to use alternatives to fluorocarbons in aerosol pesticides.

37-0018
FLUOROCARBONS

Anon
NEW RATE DATA FOR KEY OZONE DEPLETION REACTION
J. Air Pollut. Control Assoc. 25 (12): 1260, 78-9 (1975)

The findings of Drs. Michael J. Kurylo and Walter Braun of NBS that at 25°C the rate of reaction between chlorine and ozone is only 60% of the value used by Rowland et al to predict stratospheric ozone depletion (See CATS *33-0010) have been verified by studies at the University of Maryland, the University of Pittsburgh, and Queen Mary College, London, England.

These new data predict ozone depletion by chlorine at a slower rate than predicted by Rowland et al, who had to rely on data at room temperature, which is much higher than stratospheric temperatures.

37-0019
FLUOROCARBONS

Anon
ALSO AT THE MEXICO CITY MEETING, FLUOROCARBONS CAME UNDER FIRE. . .
Chem. Eng. 82 (27): 20 (22 December 1975)

Scientists at the Univ. of California (Irvine) have refined their original ozone-depletion theory, which was based on room-temperature data, by measuring F-12 UV light absorption at about -39°C, a temperature closer to that of the stratosphere. At the lower temperature, absorption is slower but the scientists claim that although chlorine thus would have a longer time to react with ozone there will be but slight change in the ozone-chlorine reaction.

Closing another loophole in the original theory, NASA scientists report that only one HCl molecule out of tens of millions would be destroyed, thus ruling out a natural ammonia-HCl sink for the harmful chlorine.

37-0020
HALOETHERS

Chang, Louis W. et al
ULTRASTRUCTURAL STUDIES ON THE PATHOLOGICAL CHANGES IN THE NEONATAL KIDNEY FOLLOWING *IN UTERO* EXPOSURE TO HALOTHANE
Environ. Res. 10 (2): 174-89 (1975)

Pathological renal lesions induced in pregnant rats exposed to 10 ppm halothane all through pregnancy strongly suggest that halothane is a potential occupational hazard especially for pregnant operating room personnel. Operating room personnel are often exposed to 10 ppm halothane for 8 hr/day and 5 days/wk.

37-0021
HEXACHLOROBENZENE

Yang, Raymond S.H. et al
CHROMATOGRAPHIC METHODS FOR THE ANALYSIS OF HEXACHLOROBENZENE AND POSSIBLE METABOLITES IN MONKEY FECAL SAMPLES
J. Assoc. Off. Anal. Chem. 58 (6): 1197-1201 (1975)

Thin layer chromatography, high-pressure liquid chromatography, and gas-liquid chromatography proved effective techniques for the separation and identification of hexachlorobenzene and possible metabolites, such as pentachlorobenzene and pentachlorophenol, from monkey feces.

37-0022
HEXACHLOROBENZENE

Hill, Kenneth R.
IUPAC COMMISSION ON TERMINAL RESIDUES
J. Assoc. Off. Anal. Chem. 58 (6): 1256-9 (1975)

Five references published in 1972 and 1973 indicate that hexachlorobenzene is metabolized by cows, sheep, and chickens whose feed contains HCB residues.

Anon
FUEL PLANT CLOSING
Chem. Week 117 (26): 10 (24 December 1975)

As a result of findings indicating the presence of the suspect carcinogen, dimethylnitrosamine, in the air near its Baltimore plant producing unsymmetrical dimethylhydrazine, FMC will stop producing the rocket fuel by 1 April 1976.

Varo, P., Symposium Editor
SELECTED SPECIALLY INVITED LECTURES PRESENTED AT THE THIRD INTERNATIONAL CONGRESS OF PESTICIDE CHEMISTRY AND THE SYMPOSIUM ON DISPERSION DYNAMICS OF POLLUTANTS IN THE ENVIRONMENT, held in Helsinki, Finland, 3-9 July 1974
Pure Appl. Chem. 42 (1-2): 1-299 (1975)

The 22 papers presented cover topics ranging from "Factors that affect the persistence of pesticides in plants and soils" (C.A. Edwards, pp. 39-56) to "The future of the development of pesticides by industry" (E.Knusli, pp. 77-87). More specific topics include: "Transport mechanisms for pesticides in the atmosphere" (C.E. Junge, pp. 95-104); ... in water (A.M. Aitsam, pp. 105-11); ... in soil (E.P. Lichtenstein, pp. 113-8); "Mathematical models in ecochemistry" (J.Robinson, pp. 139-53); "Organochlorine compounds in the general population of the seventies and some of their biological effects (in man and animals)" (M. Wasserman et al, pp. 189-208); and "Mutagenic, carcinogenic, and teratogenic effects of pollutants in respect to man" (F. Coulston and J.H. Wills, pp. 209-22).

37-0025
OPTICAL BRIGHTENERS

Ganz, Charles R. et al
REMOVAL OF DETERGENT FLUORESCENT WHITENING AGENTS FROM WASTEWATER
J. Water Pollut. Control Fed. 47 (12): 2834-49 (December 1975)

A series of studies on the removal of four ionic stilbene and three nonionic detergent fluorescent whitening agents from wastewater influent showed adsorption to the wastewater sludge to be the most likely route of FWA removal. From an experiment in which the FWA's in a sludge wet cake sample were exposed to ambient weather conditions, it appears that the FWA's in sludge do not readily enter groundwater supplies via rainwater leaching.

See: 37-0001, Acrylonitrile

See: 37-0014, Fluorocarbons

See: 37-0016, Fluorocarbons

Anon
PHTHALATES IN OCEAN WATER
Environ. Rep. 6 (16): 126 (19 December 1975)

A study by the College of Science, Texas A & M University, indicates the presence of phthalates in parts per trillion in water and parts per billion in various organisms in Gulf of Mexico samples.

Anon
SLICK IDEA FOR OIL-SPILL CLEANUP
Chem. Week 117 (26): 11 (24 December 1975)

Urethane foam chips tested by the Navy for oil-spill cleanups reach the 90% saturation point in six seconds but can be recycled in only 60 seconds for re-use up to 50 times.

POLYURETHANES

See also: 37-0037, Nitrosamines

37-0028
TRICHLOROETHYLENE

Anon
HEALTH PROBLEMS THAT MIGHT BE ASSOCIATED WITH TRICHLOROETHYLENE. . .
Chem. Eng. News 54 [illegible] : 15 (5 January 1976)

The MCA is administering a $400,000 industry-sponsored project by Industrial Bio-Test Laboratories to study the potential health hazards of trichloroethylene, which has been reported to cause liver cancer and other tumors in mice.

TRICHLOROETHYLENE

See: 37-0014, Fluorocarbons

37-0029
VINYL CHLORIDE

Anon
VC EMISSIONS
Environ. Rep. 6 (16): 123 (19 December 1975)

R. Harding, Jr., of the Society of Plastics Industry views as a "precautionary step" the proposal by EPA to classify VC as a hazardous air pollutant, claiming that those living near VC or PVC plants do not run health risks. Harding, however, feels that emission controls are in the public interest. EPA's proposed standards to reduce VC emissions 90% are based on evidence showing VC to be carcinogenic. If put into effect, four small PVC plants might be forced to close.

37-0030
VINYL CHLORIDE

Edmonds, Larry D. et al
CONGENITAL MALFORMATIONS AND VINYL CHLORIDE
Lancet 2 (7944): 1098 (29 November 1975)

Further analysis of the birth-defects attributed to vinyl chloride in infants born in Pennsylvania and Ohio showed that parents of these children did not work at the PVC polymetization plants, but that two of the fathers of the controls worked at one of the plants, and more mothers of the control babies lived nearer the plants than did mothers of the affected babies. Only the Ohio Dept. of Health study has associated the birth defects with VC. A follow-up study in Painesville, Ohio, did not associate a noted moderate increase in CNS malformations with VC exposure.

37-0031
VINYL CHLORIDE

Duck, B.W. et al
MORTALITY STUDY OF WORKERS IN A POLYVINYL-CHLORIDE PRODUCTION PLANT
Lancet 2 (7946): 1197-9 (13 December 1975)

No significant excess of total mortality and no liver cancers were found in an age-standardized mortality rate study of 2100 male workers exposed to vinyl chloride for as long as 27 years in a factory in South Wales. The factory has polymerized vinyl chloride since 1948 and produced VC monomer on the site until 1968.

37-0032
VINYL CHLORIDE

Schaffner, Robert M. and Lombardo, Pasquale
THE FOOD AND DRUG ADMINISTRATION AND THE VINYL CHLORIDE PROBLEM -- AN OVERVIEW
J. Air Pollut. Control Assoc. 58 (6): 1211-13 (1975)

The mid-1974 disclosure of angiosarcomas associated with PVC fabrication and the findings that lab animals incur cancer from chronic inhalation of VC has led the FDA to study its potential effects when ingested. These studies, reviewed here briefly, have not yet shown VC taken orally to cause angiosarcoma or other malignant tumors.

37-0033
VINYL CHLORIDE

Breder, Charles V. et al
GAS-LIQUID CHROMATOGRAPHIC DETERMINATION OF VINYL CHLORIDE IN VINYL CHLORIDE POLYMERS, FOOD-SIMULATING SOLVENTS, AND OTHER SAMPLES
J. Assoc. Off. Anal. Chem. 58 (6): 1214-20 (1975)

Gas-liquid chromatography can detect 0.05 ppm VC in solution or 1 ppm VC in PVC according to described tests using PVC, vegetable oils, mouthwashes, blood anticoagulant solutions and other solvents.

37-0034
VINYL CHLORIDE

Anon
RUSSIAN VCM CAPACITY BUILDUP IS UNDER WAY
Chem. Week 118 (1): 28 (7 January 1976)

Now that its 250,000-metric-tons/yr Kalush in the Ukraine plant is on-stream, Russia has doubled its VCM capacity. Additional capacity is planned for 1978 when a $40-million, 270,000-metric-ton/yr VCM plant on order from Germany will be ready.

See: 37-0001, Acrylonitrile

Anon
LIVER PROBLEMS STUDIED
Chem. Week 118 (1): 13 (7 January 1976)

Twenty-seven employees of BASF Wyandotte's South Kearny, N.J., plant were found to have liver abnormalities; 10 of these have had biopsies. The BASF program involving medical examinations for 50 workers may be continued for the other 250 employees. Although the United Rubber Workers earlier suggested that the liver problems were associated with vinylidene chloride, they now state that the cause has not yet been determined.

OSHA asked NIOSH to help BASF in solving the problem. Additionally, MCA is studying vinylidene chloride, which has been implicated as a potential carcinogen by Italian researchers.

VINYLIDENE CHLORIDE

See: 37-0002, Acrylonitrile

37-0036
NITROSAMINES

Laishes, B.A. et al
ORGAN-SPECIFIC DNA DAMAGE INDUCED IN MICE BY THE ORGANOTROPIC CARCINOGENS 4-NITROQUINOLINE 1-OXIDE AND DIMETHYLNITROSAMINE (38938)
Proc. Soc. Exp. Biol. Med. 149: 978-82 (1975)

The chemical carcinogen, dimethylnitrosamine (DMN) induced DNA damage in the lung, kidney, and liver of mice injected with 1 mg and 8 mg/kg. The greatest DNA fragmentation occurred in the liver. Another carcinogen, 4-nitroquinoline 1-oxide had its greatest effect on the lung, followed by the kidney and the liver. The non-carcinogen, 4-aminoquinoline 1-oxide, did not induce any DNA damage. To assess the levels of DNA tissue damage the biophysical technique of velocity sedimentation of DNA, in alkaline sucrose gradients, was used.

37-0037
NITROSAMINES

DiPaolo, Joseph A. and Cuddy, Rosemary
SUMMARY OF THE PROCEEDINGS OF THE JOINT U.S.S.R. SYMPOSIUM ON MAMMALIAN SOMATIC CELL GENETICS RELATED TO NEOPLASIA
J. Nat. Cancer Inst. 55 (6): 1369-71 (December 1975)

A 2-day symposium on the title topic held in Moscow on 17-20 June 1974 included several papers concerned with mutagenesis in relation to carcinogenesis involving such chemicals as urethan, dimethylnitrosamine (DMN), diethylnitrosamine (DENA), and methylnitrosourea (MNU).

This summary indicates that DMN and DENA caused pulmonary tumors in hamsters, but that urethan did not. The carcinogens induced chromosome aberrations when tested on rat kidney, lung, or mixed tissues.

37-0038
NITROSAMINES

Tabuchi, Yoshiki et al
MUCOSAL DAMAGE INDUCED BY VARIOUS GASTRIC CARCINOGENS IN THE GLANDULAR STOMACH OF THE RAT
J. Nat. Cancer Inst. 55 (6): 1395-1401 (December 1975)

N-Methyl-N'-nitro-N-nitrosoguanidine (MNNG) was previously shown to injure the glandular mucosa of the rat stomach, a result that can lead to gastric carcinogenesis. In this study rats were given one or more intragastric doses of MNNG (100 mg/kg body weight) and the induced erosion was studied histologically, histochemically, and ultramicroscopically and compared with the erosion process caused by other gastric carcinogens and certain other chemicals.

Mucosal damage from MNNG started in the surface epithelium within an hour; erosion occurred as soon as 2 days after 3 successive doses of MNNG. Fatty change in the mucosal cells was the first transformation noted. Other gastric carcinogens tested produced similar results.

37-0039
NITROSAMINES

Lilly, Lorna J. et al
CHROMOSOME ABERRATIONS INDUCED IN RAT LYMPHOCYTES BY N-NITROSO COMPOUNDS AS A POSSIBLE BASIS FOR CARCINOGEN SCREENING
Nature 258 (5536): 611-2 (18 December 1975)

Chromosome aberrations in rat lymphocyte cultures treated with dimethylnitrosamine (DMN) *in vitro* were not significantly different from control cultures. However, a significant increase in aberrations was noted in cultured lymphocytes from rats injected i.p. with 30 mg/kg body weight of DMN, 6 hr before being killed. Apparently, active metabolites from DMN are stable enough to pass from their sites of formation in such organs as the liver, which are capable of activating the compound, and to reach the nuclei of the circulating lymphocytes.

See: 37-0023, Hydrazine

37-0040
GENERAL INFORMATION

Anon
END OF LINE FOR KEPONE
Chem. Week 117 (26): 10(24 December 1975)

EPA recommends a long-term health study of residents of Hopewell, Va., now that EPA investigations have shown that from March 1974-April 1975 Kepone levels of 0.2-50 mg/cu m were detected in air 200 yards from the Life Science Products plant (which was closed in August 1975) and levels of 0.1-20 nanograms/cu m were found in the air of South Richmond, 16 miles from Hopewell. Other findings: 200-600 ppm Kepone in sludge near the company's sewage treatment plant; levels of 0.1-10 ppm Kepone in waste water at the sewage treatment plant; 0.1-4 ppb in James River water; and 0.1-20 ppm in fish and shellfish in the James River.

37-0041
GENERAL INFORMATION

Anon
KEPONE STUDY WIDENS
Chem. Week 118 (1): 13 (7 January 1976)

Although Life Science Products, Hopewell, Va., no longer makes Kepone, detectable levels of the pesticide have been found in the air and water for some distance around Hopewell, prompting a request for a federal grand jury investigation of the company's operations.

Meanwhile, former Life Science employees, who are suing that company, are now also seeking redress from Allied and Hooker Chemicals and Plastics. They claim that Allied failed to make known that Kepone was very toxic to humans, did not properly label containers, and neglected to provide information on an antidote.

37-0042
GENERAL INFORMATION

Anon
CHLORINE CAR EXPLODES
Chem. Week 117 (26): 10 (24 December 1975)

Four workers were killed and 86 were injured or treated for fume inhalation, when a 30-ton rail tank car containing recovered chlorine exploded recently at the Niagara Falls plant of Hooker Chemical and Plastics. The resulting fumes traveled to a nearby residential area and a shopping center. Cause of the explosion was not determined.

The chlorine, recovered from Hooker's by-product gases was being stored for future use in the company's 400 tons/day chlorine plant that employs about 1500 workers.

37-0043
GENERAL INFORMATION

Bock, Fred G. et al
COCARCINOGENIC ACTIVITY OF PEROXY COMPOUNDS
J. Nat. Cancer Inst. 55 (6): 1359-61 (December 1975)

Peracetic acid (PAA), used in several ways as an industrial chemical, as a lab cold-temperature sterilizing agent, and suggested (in dilute solution) as a preoperative sterilizing agent for surgeons' hands, was found to be a potent tumor promoter and a weak complete skin carcinogen in tests on mice. Although humans are not so sensitive to contact carcinogens as are mice, the possibility is raised that tumors in man might result from the action of other carcinogens with PAA, especially in pulmonary exposure.

37-0044
GENERAL INFORMATION

Anon
PEREGRINE FALCON
Environ. Rep. 6 (15): 117 (9 December 1975)

The inadequate reproductive rate of the peregrine falcon in northwest Alaska, blamed on organochlorine pesticide residues in their eggs, argues for the complete disappearance of the birds by 1980, unless corrective measures can be taken. Aleutian peregrines have not been similarly affected because of smaller residues in their eggs.

37-0045
GENERAL INFORMATION

Calabrese, Edward J. and Sorensen, Alfred
COMMENT ON "METHYLCYCLOPENTADIENYL MANGANESE TRICARBONYL AS AN ANTIKNOCK: COMPOSITION AND FATE OF MANGANESE EXHAUST PRODUCTS"
J. Air Pollut. Control Assoc. 25 (12): 1254-6 (1975)

Contradicting the statement by G.L. Ter Haar et al (See: CATS #27-0036) that methylcyclopentadienyl manganese tricarbonyl (MMT), if used as an antiknock, would not constitute a public health hazard, the authors suggest that Mn has catalytic properties which could enable it to convert SO_2 to sulfuric acid and particulate sulfates.

Ter Haar et al refute this claim, but agree that further study is advisable.

38-0001
ASBESTOS

Myers, John L.
HANDLING ASBESTOS. CHRYSOTILE ASBESTOS IN PLASTICS
J. Paint Technol. 47 (611): 63-7 (December 1975)

To gain perspective on the potential hazards of asbestos, the author describes the various types of asbestos, reviews its uses, its associated occupational and environmental health hazards, and the regulations imposed on its use by OSHA and EPA.

Approximately one-third of the asbestos consumed annually is used by the plastics industry. Chrysotile asbestos, the only asbestiform mineral in the serpentine class, has over 3,000 uses and for many of these uses there is no readily available substitute. Its consumption is on the increase, with 791,020 tons being consumed in 1972 versus 686,044 tons in 1967. Chrysotile is less of a health hazard than amosite and crocidolite, which are identified as amphibole asbestiform minerals. Use of these latter types has decreased in recent years. When used with proper control, chrysotile should not cause any undue hazards.

38-0002
ASBESTOS

Beaman, D.R. and File, D.M.
QUANTITATIVE DETERMINATION OF ASBESTOS FIBER CONCENTRATIONS
Anal. Chem. 48 (1): 101-10 (1976)

The use of transmission electron microscope equipped with selected area electron diffraction plus an energy dispersive spectrometer to determine the concentration of asbestos fibers in filterable liquids and solid matrices is described. Morphology, elemental composition, and crystal structure can be determined almost simultaneously and the method is ± 30% precise.

38-0003
ASBESTOS

Harrison, Elizabeth A.
INDUSTRIAL HEALTH HAZARDS DUE TO ATMOSPHERIC FACTORS (A BIBLIOGRAPHY WITH ABSTRACTS
NTIS/PS-75/800/3WJ (October 1975)

The bibliography contains abstracts of research reports covering such topics as industrial medicine, occupational diseases, health of miners, and the toxicological factors of various pollutants. Some pollutants included are manganese, radon, silicon dioxide, explosives, asbestos, platinum, palladium, polyvinyl chloride, nickel, pesticides, chromium, plastics and vanadium. (Contains 202 abstracts)

[Abstract in NTIS Weekly Government Abstracts, Medicine and Biology, p. 17 (5 January 1976)]

38-0004
ASBESTOS

Larsen, Lee B.
HEALTH HAZARD EVALUATION/TOXICITY DETERMINATION REPORT 73-135-138, KAISER PERMANENTE CEMENT CO., LUCERNE VALLEY, CALIFORNIA.
PB-246 456/8WJ (May 1974)

The National Institute for Occupational Safety and Health (NIOSH) in response to a request received from a representative of employees conducted a health hazard survey to evaluate exposures to free silica, asbestos, and iron oxide at the Kaiser Permanente Cement Co., Lucerne Valley, California. It has been determined that free silica and iron oxide dust were not toxic at the concentrations measured at the time of the survey. The potential toxicity of asbestos in very low concentrations is not known at present. Air concentrations at the time of the survey were below present federal standards for asbestos.

[Abstract in: NTIS Weekly Government Abstracts, Medicine and Biology, p. 21 (5 January 1976)]

38-0005
ASBESTOS

Ramos, Henry
HEALTH HAZARD EVALUATION/TOXICITY DETERMINATION REPORT 73-133-136, ARMSTRONG CORK COMPANY, JACKSON, MISSISSIPPI.
PB-246 455/OWJ (May 1974)

In response to a request received from a representative of employees, the National Institute for Occupational Safety and Health (NIOSH) conducted a health hazard survey to evaluate exposures to mottle dust and asbestos. at Armstrong Cork Company, Jackson, Mississippi. It has been determined that employee exposures to mottle dust which contained small amounts of lead and asbestos found in the Mottle Area were not toxic in the concentrations measured at the time of this survey. This determination was based on low workroom concentrations of these substances and absence of medical symptomatology.

[Abstract in: NTIS Weekly Government Abstracts, Medicine and Biology, pp. 20-1 (5 January 1976)]

38-0006
ASBESTOS

Plant, Albert F.
LEST WE FORGET: RESERVE MINING (Editorial)
Chem. Eng. News 54 (3): 4 (19 January 1976)

Using the case of Reserve Mining Company's on-and-off-dumping of its taconite tailings into Lake Superior, the author comments on the increasing complexity of pollution abatement and the long, drawn-out judicial and governmental involvements. Adding to the confusion involving this case, is new evidence that indicates air-borne asbestos-type fibers may cause cancer.

McCann, Joyce et al
DETECTION OF CARCINOGENS AS MUTAGENS IN THE *SALMONELLA*/MICROSOME TEST:
ASSAY OF 300 CHEMICALS
Proc. Nat. Acad. Sci. USA 72 (12): 5135-9 (1975)

The *Salmonella*/microsome mutagenicity test seems to offer promise as a means of detecting potential carcinogens and mutagens quickly and inexpensively. To test its feasibility, this method was used to determine the mutagenicity of about 300 carcinogenic and non-carcinogenic chemicals.

These chemicals included β-naphthylamine, benzidine, bis(chloromethyl) ether, β-propiolactone, di-n-butylnitrosamine, and ethyleneimine among those carcinogens which tested as mutagenic. N-Methyl-N'-nitro-N-nitrosoguanidine and several related compounds are also listed as carcinogenic and mutagenic, while di-n-propyl- and di-n-pentylnitrosamine, dimethyl- and diethylnitrosamine are listed as weakly mutagenic. Other carcinogens shown as weakly mutagenic include ethylene dibromide, vinyl chloride, hydrazine sulfate, and N-(2-hydroxyethyl) hydrazine. Vinylidene chloride, listed as a questionable carcinogen, appeared to be weakly mutagenic, and α-naphthylamine (non-carcinogenic in most studies) showed signs of mutagenicity. The non-carcinogens dibenzyl- and diphenylnitrosamine could not be tested adequately for mutagenicity, while the carcinogenic compound, 1,2-dimethylhydrazine showed no signs of mutagenicity.

See: 38-0007, Benzidine

Gutenmann, W.H. and Lisk, D.J.
FLAME RETARDANT RELEASE FROM FABRICS DURING LAUNDERING AND THEIR TOXICITY TO FISH
Bull. Environ. Contam. Toxicol. 14 (1):61-4 (July 1975)

The organophosphorus compounds tris(2,3-dibromopropyl)phosphate (I), Pyrovatex CP (N-methylol dimethyl phosphonopropionamide) (II), and THPOH [tetrakis (hydroxymethyl) phosphonium hydroxide] (III), commercially available flame retardants for textiles, were tested for their toxicity to goldfish at a concentration equivalent to 1 ppm, respectively, in water. During the first five days of exposure to compound I, the only halogenated phosphorus compound tested, all the fish died. Compound II did not appear to be toxic to the fish over a period of 30 days, while compound III caused some deaths. It was assumed that, because of its greater lipoid solubility, compound I was more efficiently absorbed by the goldfish.

38-0009
FLUOROCARBONS

Anon
OZONE DROP SUPPORTS DEPLETION THEORY
Sci. News 109 (3): 38 (17 January 1976)

Measurements of ozone concentrations in the stratosphere made by a Nimbus 4 weather satellite confirm scientific predictions that an August 1972 solar flare, which produced a huge amount of energetic protons, did in fact cause an ozone decrease. Fluxes of secondary electrons produced by the protons of dissociated nitrogen gas, causing the formation of NO, which attacked and depleted the stratospheric ozone by 16% over the North Pole. The effect was discontinuous, the drop in ozone remaining level until the NO was removed from the area by air currents. Advocates of the ozone depletion theory claim this natural event gives credence to the theory and that the discontinuous effect indicates the lack of an atmospheric sink for the chemicals involved in this ozone depletion effect

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38-0010
FLUOROCARBONS

Anon
MCA STUDY ADDS TO FLUOROCARBON FIGHT
Chem. Eng. News 54 (3): 7-8 (19 January 1976)

According to Drs. Nien Dak Sze and Mao Fou Wu of Environmental Research and Technology Inc., Concord, Mass., who conducted an MCA-sponsored study, it seems likely that there is a "tropospheric sink" that might remove chlorofluorocarbons in the troposphere. Such a sink would cut down the halocarbons diffusing to the stratosphere and, under steady-state conditions, a sink with a 10-year lifetime would produce a drop of only 1.2% in ozone levels versus 8.5% for an infinite lifetime. Dr. Rowland, who first proposed the ozone depletion theory, reports his latest studies do not indicate that a tropospheric sink exists.

Stedman, D.H.
MEASUREMENT TECHNIQUES FOR THE OZONE LAYER
Res./Dev. 27 (1): 22-6 (1976)

Chemiluminescent techniques, electron capture gas chromatography, and a technique involving resonance fluorescence are discussed as means of determing important stratospheric reactants, leading to an understanding of how propellants react in the atmosphere.

See: 38-0007, Benzidine

38-0012
HYDRAZINE

Weeks, Robert W., Jr., et al
FLUORESCENT DETECTION OF HYDRAZINES VIA FLUORESCAMINE AND ISOMERIC PHTHALALDEHYDES
Anal. Chem. 48 (1): 159-61 (1975)

Detection of hydrazines at the ng/cm^2 level with fluorescamine and with o- and p-phthalaldehyde is discussed.

HYDRAZINE

See: 38-0007, Benzidine

38-0013
LIQUEFACTION AND GASIFICATION OF COAL

Anon
LIQUEFACTION A SUCCESS EXXON CLAIMS
Hydrocarbon Process. 54 (12): 19 (December 1975)

The Exxon Donor Solvent (EDS) Process in which coal is liquefied in a non-catalytic reactor at moderate temperature and pressure is reportedly working well in the Baytown, Texas, pilot plant. Liquid products produced can be used for motor gasoline blending stocks and low-sulfur fuel oil.

38-0014
LIQUEFACTION AND GASIFICATION OF COAL

Chironis, Nicholas P.
NEW ATHENS, ILLINOIS. . . WINNING SITE FOR COALCON'S WINNING TECHNIQUE OF CONVERTING COAL TO LIQUIDS AND GASES
Coal Age 80 (13): 74-7 (December 1975)

ERDA chose New Athens, near Belleville, in Illinois as the location of a $237 million, 2600-tpd coal conversion demonstration plant. The plant will use Coalcon's process to produce 3900 bbl/day of liquid fuels for boilers and 22 million cfd of high-Btu pipeline gas, when ready in 1980. Factors contributing to the site selection are discussed. The site is generally free of environmental problems even though taller stacks may be required to meet air quality standards under various meteorological conditions.

38-0015
LIQUEFACTION AND GASIFICATION OF COAL

Tillman, David A.
STATUS OF COAL GASIFICATION
Environ. Sci. Technol. 10 (1): 34-8 (January 1976)

The Wellman-Galusha, the Koppers-Totzek, and the Lurgi gasifiers are compared on the basic of their economic and environmental criteria.

38-0016
LIQUEFACTION AND GASIFICATION OF COAL

Hughes, Evan E. et al
CONTROL OF ENVIRONMENTAL IMPACTS FROM ADVANCED ENERGY SOURCES
EPA/600/2-74-002. EPA Contract No. 68-01-0483 PB-239 450/OGA (March 1974)

The technology and environmental effects associated with production of energy from new or advanced sources are reviewed. These include solar, geothermal, oil shale, solid wastes, underground coal gasification, and hydrogen energy sources. Projections to the year 2000 of levels of energy production from the first four of these sources are presented. Environmental impacts on air and water quality, and land use are derived per unit of energy. Levels of pollutant emissions and other environmental effects of the development of these advanced energy sources are projected. Impacts likely to require control measures are identified. Subjects for research and development directed toward control of environmental impacts are recommended. These recommendations are incorporated into a research and development plan. Approximate priority assignments derived from consideration of the timing of development and the importance and degree of definition of the identified environmental effects are given.

[Abstract in: Government Reports Announcements 75(10): 112 (16 May 1975)]

Anon
GOVERNMENT REPORT CITES CANCER THREAT AND OTHER PROBLEMS IN COAL CONVERSION
Coal Age 80 (12): 13 (November 1975)

The Appalachian coal region is suggested as a prime area for coal conversion activities but commercial coal conversion may be a potential cause of cancer from atmospheric pollution, according to an unpublished report prepared for the President's Energy Resources Council. Nevertheless, the report recommends that the government develop commercial incentives to produce 350,000 bbl/day of synthetic oil.

38-0018
MODEL ECOSYSTEMS

Levin, Simon A.
ECOSYSTEM ANALYSIS AND PREDICTION
PB-246 391/7WJ (July 1974)

The Conference on EcoSystem: Analysis and Prediction held at Alta, Utah, July 1-5, 1974, was called to assess the degree to which mathematics has contributed, is contributing, and may contribute to solving the problem of the prediction of the response of ecosystems to perturbations. The conference report contains the papers presented at the conference, several additional post-conference contributions, and a summary of the discussion of each paper. The major topics discussed in the conference and subsequent report are: the threshold problem in ecosystems, difficulties in modelling populations, population-community and population-ecosystem interfaces, ecosystem level concepts, new mathematical constructs and directions, and the use of control theory in ecosystem management.

[Abstract in: NTIS Weekly Government Abstracts, Medicine and Biology, p. 6 (5 January 1976)]

38-0019
MODEL ECOSYSTEMS

Sanborn, James R.
THE FATE OF SELECT PESTICIDES IN THE AQUATIC ENVIRONMENT
PB-239 749/5GA. EPA/660/3-74-025 (December 1974)

In this study, 17 organic pesticides and five industrial chemicals were examined in a terrestrial-aquatic model ecosystem in an effort to determine their persistence and accumulation by the organisms of this system. Several classes of pesticides are represented as one or more insecticides, herbicides, miticides or plasticizers were investigated in this system. The use of this system for examining uptake and persistence of widely used agricultural chemicals provides the necessary data for comparison of field data to provide a framework which can be used to assess the potential environmental impact of new pesticides before they are given a recommendation for generalized use. The data obtained from this work suggest that this model ecosystem is useful for the determination of the uptake and persistence of pesticides by the organisms. In general, it was found that most chemicals, with the exception of the persistent soil insecticide, dieldrin, underwent extensive degradation under the experimental conditions of the system.

[Abstract in: Government Reports Announcements 75 (10): 40 (16 May 1975)]

Bender, Edward S. and Pearson, J. Gareth
RESULTS FROM AQUATIC ECOLOGICAL SURVEYS AT NEWPORT ARMY AMMUNITION PLANT, NEWPORT, INDIANA
AD-A016 897/1WJ. EB-TR-75044 (October 1975)

Aquatic ecological surveys were conducted at Newport Army Ammunition Plant (NAAP) from February through June 1973 to determine the effects of TNT manufacturing and other plant operations on the water quality and stream biota of the drainages surrounding NAAP. Macroinvertebrates and stream water quality were sampled monthly, and fishes quarterly. Fishes collected were typical for streams in the area. Diversity and abundance of macroinvertebrates were affected more by natural fluctuations in the flow and runoff than by discharges or accidental spill from the TNT facility.

[Abstract in: NTIS Weekly Government Abstracts, Medicine and Biology, p.5 (5 January 1976)]

See: 38-0007, Benzidine

Jaques, L.B. and Sue, T.K.
MOBILIZATION OF CHONDROITIN SULPHATE BY NITRILOTRIACETIC ACID
Toxicol. Appl. Pharmacol. 34 (3): 521-4 (December 1975)

Examination of urine from dogs after administration of 10, 20, and 50 mg NTA/kg, using more specific tests for sulfated mucopolysaccharides, showed the excretion product to be degraded by chondroitinase AC, and to be chondroitin sulfate.

See: 38-0037, Vinyl Chloride

See: 38-0007, Benzidine

Giam, C.S. et al
CONFIRMATION OF PHTHALATE ESTERS FROM ENVIRONMENTAL SAMPLES BY DERIVATIZATION
Anal. Chem. 48 (1): 78-80 (1976)

Chemical confirmation of trace amounts of phthalate ester plasticizers was made via a simple, sensitive method, which involved hydrolysis of the esters and fusion of the resultant acid with 2-chloroethylamine hydrochloride, yielding N-(2-chloroethyl)phthalimide. The phthalamide is then extracted, and analyzed by gas chromatography and an electron capture detector. A low background of 30 ng or less of di-(2-ethylhexyl)phthalate results, and the phthalimide is separated from most of the other compounds in the environmental samples.

38-0023
POLYURETHANES

Anon
POLYURETHANE
Chem. Eng. News 54 (3): 16 (19 January 1976)

When completed in mid-1977, the 25% expansion underway at Firestone Tire & Rubber's foam rubber plant at Milan, Texas, will raise total capacity to over 150 million board feet/year.

38-0024
POLYURETHANES
(Markets)

Anon
THE SLOW ROAD BACK
Mod. Plast. 53 (1): 38-51 (1976)

Reviews market status of plastics in 1975, including sales, pattern of consumption, major markets, etc. Polyurethanes and polyvinyl chloride experienced consumption drops of about 20% in 1975 compared to 1974.

38-0025
TRICHLOROETHYLENE

Vandervort, Robert and Thoburn, Theodore
HEALTH HAZARD EVALUATION/TOXICITY DETERMINATION REPORT 73-68-187, McCall Printing Company, Dayton, Ohio
PB-246 448/5WJ. NIOSH-TR-HHE-73-68-187 (April 1975)

NIOSH conducted a health hazard survey to evaluate employee exposures to air contaminants in the letterpress room of a large printing company. It was determined from environmental and medical data that trichloroethylene was not toxic in the amounts used in paper splicing. Paper dust exposures were found to cause mild irritation in employees with allergic disorders, and exposures to 'press oven smoke' resulted in episodes of minor, transient, irritative symptoms.

TRICHLOROETHYLENE

See: 38-0037, Vinyl Chloride

Anon
NEW OIL SHALE DEAL MAY TRIGGER BIG UTAH PROJECT
Chem. Week 118 (2): 13 (14 January 1976)

The Oil Shale Corp. (Tosco) will start predevelopment work in 1976 on a commercial-size oil shale processing plant now that the Utah Land Board has given the company permission to unitize 29 separate state oil shale leases. An eventual 75,000-bbls/day would up permanent jobs in Utah by about 1,500.

SHALE OIL EXTRACTION AND REFINING

See: 38-0016, Liquefaction and Gasification of Coal

38-0027
VINYL CHLORIDE

Hoffmann, Dietrich et al
CHROMATOGRAPHIC DETERMINATION OF VINYL CHLORIDE IN TOBACCO SMOKE
Anal. Chem. 48 (1): 47-50 (1976)

The described chemical-analytical technique in which the vinyl chloride (VC) in tobacco smoke is converted to 1,2-dibromo-1-chloroethane (DB-VC), after being trapped on charcoal and extracted, shows the presence of up to 16 ng of VC in cigarette smoke and 20 ng in little cigar smoke, a concentration equivalent to approximately 30 ppb. The presence of VC in marijuana smoke adds to the possibility that VC can be emitted into the atmosphere by the burning of plant materials or other organic matter that contains chlorine. Quantitative determination was made via gas liquid chromatography with an electron capture detector.

38-0028
VINYL CHLORIDE

Feron, V.J. et al
OBSERVATIONS ON THE ORAL ADMINISTRATION AND TOXICITY OF VINYL CHLORIDE IN RATS
Food Cosmet. Toxicol. 13 (6): 633-8 (December 1975)

In an effort to determine the potential toxicity of vinyl chloride monomer (VCM) when administered orally, rats were given 300 mg VCM in soya-bean oil/kg body weight by stomach intubation and 30, 100, and 300 mg VCM/kg body weight by gavage. Rats were also fed diets containing PVC powder with a VCM initial content of 1850 ppm.

Over 92% of the VCM given in oil by gavage at the 300 mg level was recovered from the atmosphere within 4 hours. Rats treated in this manner showed no gain in body weight and only a slight decrease in white blood cells and blood sugar content. A significant increase was noted in liver-to-body weight, but histological liver changes did not confirm liver damage. A 2-year chronic toxicity/carcinogenicity study of the effects of orally-administered VCM in rats is underway now.

38-0029
VINYL CHLORIDE

Hefner, R.E., Jr. et al
PERCUTANEOUS ABSORPTION OF VINYL CHLORIDE
Toxicol. Appl. Pharmacol. 34 (3): 529-32 (December 1975)

Monkeys were exposed to inhalation concentrations of 7000 and 800 ppm of vinyl chloride (VC) for 2.0 and 2.5 hr, respectively. The amount of VC absorbed at 7000 ppm was 0.023% and at 800 ppm it was 0.031%. Most of the VC absorbed was eliminated through the lungs.

These data indicate that a 6-ft, 90-kg man exposed to 7000 ppm of VC for 2 hr would absorb 4.75 mg, an amount corresponding to exposure to 0.2 ppm in the air for 8 hr (assuming amount of inhaled air to be 10 cu m and all inhaled VC is absorbed). It is concluded that the body will absorb significant amounts of VC following short-term exposures of the skin to high concentrations but that no significant percutaneous absorption is likely to result from exposure to concentrations of VC as low as 1 or 5 ppm in the working environment.

38-0030
VINYL CHLORIDE

Anon
NOW PVC MOVES UP TO THE ROOFTOP IN MULTIFUNCTION SOLAR ENERGY SYSTEM
Mod. Plast. 53 (1): 26, 28, (1976)

Markosite Breathing Shingles from Markos Inc., Ft. Lauderdale, Florida, are roof shingles injection molded in PVC, which can be used for roofing of homes with a solar-heated hot water supply. The shingles have an acceptable UL and ASTM fire-retardance rating.

38-0031
VINYL CHLORIDE

Tordella, J.P.
PERMANENT PLASTICIZER RESINS FOR PVC
Mod. Plast. 53 (1): 64-6 (1976)

DuPont is developing two permanent plasticizers for PVC. Identified as PB 3041 and PB 3042, these plasticizers are high-molecular-weight ethylene copolymers, slightly crystalline, having low melting points and heats of fusion. Available as pellets or granules, the plasticizers contribute low-temperature impact resistance and high tear strength. Physical and electrical properties are tabulated.

38-0032
VINYL CHLORIDE
(Production)

Anon
NEW DISPERSION PVC PLANT
Mod. Plast. 53 (1): 85 (1976)

Firestone Plastics Co. is now onstream with its Perryville, Missouri, PVC plant which has a capacity of 23,000 tons. Firestone thus becomes the largest U.S. producer of dispersion-grade PVC. The new plant uses cotinuous polymerization and a new spray-drying technique.

38-0033
VINYL CHLORIDE

MacBride, Roland R.
THE BETTER-TIMES GAP IN VCM CAPACITY COULD LEAD TO NEW CAPTIVE VENTURES
Mod. Plast. 53 (1): 12 (1976)

The summer of 1976 could see another shortage of VCM because no significant increase in capacity has occurred since early 1975 and expectations are that by mid-1976 there will be 588,000 tons more PVC capacity. The increased PVC capacity results from a gain of 716,000 tons via Georgia-Pacific, Robintech, Firestone and Tenneco minus 128,000 tons from the drop out of Olin and Uniroyal. Although indications are that some 800,000 additional tons of VCM may be needed by 1979, Conoco Chemicals is the only producer contemplating a large expansion, but Borden is building, Robintech is trying to buy a VCM facility, etc.

As of 1 January 1976, the price of VCM rose by 1.6¢/lb to 12.6¢/lb.

38-0034
VINYL CHLORIDE
(Production)

Anon
VINYL DISPERSION RESINS
Chem. Eng. News 54 (3): 16 (19 January 1976)

Union Carbide will close its plant at South Charleston, W. Virginia, by the end of 1976, thus elimininating 40 million lb/yr of PVC homopolymers and vinyl chloride-vinyl acetate copolymer resins. Carbide will continue to manufacture solution and suspension vinyl resins.

38-0035
VINYL CHLORIDE
(Markets)

Baba, Theodore B. and Kennedy, James R.
ETHYLENE AND ITS COPRODUCTS: THE NEW ECONOMICS
Chem. Eng. 83 (1): 116-28 (5 January 1976)

Impact on the economics of ethylene and other petrochemicals stemming from possible need to use heavier feedstocks is reviewed. Polyvinyl chloride and other plastics consume most of the ethylene produced.

38-0036
VINYL CHLORIDE

Dwyer, F.G. et al
EFFICIENT, NONPOLLUTING ETHYLBENZENE PROCESS
Chem. Eng. 83 (1): 90-1 (5 January 1976)

A new alkylation catalyst developed jointly by Mobil Oil Corp. subsidiaries and The Badger Co., offers economic and environmental advantages for the production of ethylene. The catalyst, successfully tested in a 40-million-lb/yr demonstration plant, is environmentally inert. Process streams do not require treatment.

38-0037
VINYL CHLORIDE

Gay, Bruce W., Jr., et al
ATMOSPHERIC OXIDATION OF CHLORINATED ETHYLENES
Environ. Sci. Technol. 10 (1): 58-67 (1976)

To provide additional information leading to an understanding of the atmospheric degradation of halogenated compounds, photooxidation reactions and products of ethylene (and various chlorinated ethylenes) and nitrogen dioxide were measured. Reactivities of the compounds were rated as follows: 1,1-dichloroethylene (vinylidene chloride) > 1,2-dichloroethylene-trichloroethylene > ethylene > vinyl chloride > tetrachloroethylene (perchloroethylene). Photooxidation products are discussed.

VINYL CHLORIDE

See: 38-0003, Asbestos

See: 38-0007, Benzidine

See: 38-0024, Polyurethanes

See: 38-0007, Benzidine

See: 38-0037, Vinyl Chloride

38-0038
ETHYLENE DIBROMIDE

Dumas, T. and Bond, E.J.
BROMIDE RESIDUES IN APPLES FUMIGATED WITH ETHYLENE DIBROMIDE
J. Agric. Food Chem. 23 (1): 95-8 (1975)

Three varieties of apples were fumigated with 8-24 mg/1 of ethylene dibromide (EDB) for 4 hr at 13°C and held at this temperature. In less than 13 days, the EDB residues in the pulp and skin had dropped to less than 0.1 ppm. At 20°C, it took only 5 days for the residues to decline to negligible levels; at 25°C, only 4 days. At a storage temperature of only 4°C, however, higher residues persisted for almost 4 weeks before dropping to the 0.1 ppm level. Levels of up to 30 ppm of EDB in the seeds immediately after fumigation did not decline during 13 days of storage at 13°C. Inorganic bromide residues after the desorption of organic bromide were from 2.0-4.8 ppm, even when the amount of EDB used in fumigation was twice the effective dosage used in practice.

(A summary of this article in Food, Cosmet. Toxicol. 13 (6): 671 (Dec. 1975) describes these results as "fairly reassuring" since an earlier report had indicated that repeated doses of EDB had caused squamous-cell carcinomas in the forestomach of rats and mice.)

ETHYLENE DIBROMIDE

See: 38-0007, Benzidine

38-0039
NITROSAMINES

Shapley, Deborah
NITROSAMINES: SCIENTISTS ON THE TRAIL OF PRIME SUSPECT IN URBAN CANCER
Science 191 (4224): 268-70 (23 January 1976)

Nitrosamines, known animal carcinogens, have recently been detected in air, soil, water, and sewage treatment plants from NYC to West Virginia. Although nitrosamines have not yet been identified as human carcinogens, there is a potential that may be health hazards. It may be that nitrosamines, rather than NO or NO_2, are responsible for the high levels of cancer correlated with the nitrogen oxides in some urban areas. Control of nitrosamines may be difficult since they are generated from various chemicals almost anywhere in the environment. From the levels of dimethylnitrosamine (DMN) measured in Belle, W. Va., humans could inhale 1 to 1.4 μg of DMN on a clear day.

38-0040
NITROSAMINES

Weekes, U.Y.
METABOLISM OF DIMETHYLNITROSAMINE TO MUTAGENIC INTERMEDIATES BY KIDNEY MICROSOMAL ENZYMES AND CORRELATION WITH REPORTED HOST SUSCEPTIBILITY TO KIDNEY TUMORS
J. Nat. Cancer Inst. 55 (5): 1199-1201 (November 1975)

Purified kidney microsomal enzymes from certain mice were highly capable of generating mutagenic intermediates from dimethylnitrosamine. In the mouse strains examined, the study showed a correlation between the susceptibility of certain organs to tumors induced by this compound and the ability of the same organs to activate the nitrosamine to mutagenic metabolites in vitro.

38-0041
NITROSAMINES

Althoff, Jürgen et al
CARCINOGENIC EFFECT OF 2,2'-DIMETHYLDIPROPYLNITROSAMINE IN SYRIAN HAMSTERS
J. Nat. Cancer Inst. 55 (1): 1209-11 (November 1975)

Syrian hamsters injected sc once a week for life at levels of 500, 250, 125 and 62.5 mg/kg body weight with 2,2'-dimethyldipropylnitrosamine (DMDPN) developed neoplasms in the nasal cavities, larynx, trachea, and bronchi, but not in other organs. Comparisons are made with the carcinogenic effects of di-n-propylnitrosamine (DPN), previously attributed to oxidation at the beta carbon. DMDPN, however, could not undergo beta oxidation. It is suggested that beta oxidation might be involved in liver, pancreas and kidney cancer development and that different metabolic pathways govern the development of cancers in different organ systems.

38-0042
NITROSAMINES

Phillips, J.C. et al
STUDIES ON THE METABOLISM OF DIMETHYLNITROSAMINE IN THE RAT. II. THE EFFECTS OF PHENOBARBITONE AND 20-METHYLCHOLANTHRENE ON THE *IN VITRO* AND *IN VIVO* METABOLISM AND ACUTE TOXICITY OF DIMETHYLNITROSAMINE IN YOUNG AND MATURE RATS
Food Cosmet. Toxicol. 13 (6): 611-17 (December 1975)

Examination of livers from 5-week old and 16-week old male and female rats given ^{14}C-labelled dimethylnitrosamine (DMN) ip showed similar levels of DMN demethylase activity and comparable liver weights, microsomal protein and cytochrome P-450 content. There was no significant difference in the acute toxicity (LD$_{50}$) of DMN in either the young or old animals, but the LD$_{50}$ was reduced in mature females pretreated with phenobarbitone.

Fiddler, W. et al
DIMETHYLNITROSAMINE IN SOUSE AND SIMILAR JELLIED CURED-MEAT PRODUCTS
Food Cosmet. Toxicol. 13 (6): 653-4 (December 1975)

Analysis of 7 samples of commercial souse, two samples of blood and tongue, and one of head cheese showed that 8 of the 10 samples contained from 3 to 63 μg/kg of dimethylnitrosamine (DMNA). These jellied products, cured with nitrite or nitrite-nitrate, are not widely used in the U.S. but may be important parts of diets elsewhere. Products containing gelatin will be analyzed for DMNA, since nitrosamines are potential carcinogens and relatively little is known about their presence in the human diet.

38-0044
GENERAL INFORMATION

Anon
RED DYE 2 FADE-OUT?
Chem. Week 118 (3): 17 (21 January 1976)

The removal of Red Dye No. 2 from the FDA's 1960 list of provisionally approved food colorings is being considered. This action follows the release of an FDA report which showed that one-third of the female rats fed large doses of that dye for two and a half years developed cancer of the kidney, liver or muscles, or lukemia. The highest dosages of 300 ppm given to animals appeared five times more likely to develop cancer than those fed lower dosages. Rats younger than two did not develop malignancies, a fact which may explain why cancer was not detected in the FDA research conducted for 24 months in the 1950's

The FDA also intends to ban the use of the growth stimulant, diethylstilbestrol (DES) and to issue a warning of an association between uterine cancer and some estrogen drugs.

38-0045
GENERAL INFORMATION

Duffie, John A. and Beckman, William A.
SOLAR HEATING AND COOLING
Science 191 (4223): 143-9 (16 January 1976)

One-quarter of the nation's energy use consists of thermal energy for buildings at temperatures near or below 100°C. Solar heating and cooling for buildings delivered from flat-plate solar energy collectors is expected to be the first large-scale application of solar energy. The authors consider and discuss technical, economic and social factors influencing this development, including architectural constraints, special tax and government inducements, and utilization of existing information and data.

38-0046
GENERAL INFORMATION

Fisher, Nicholas S.
NORTH SEA PHYTOPLANKTON
Nature 259 (5539): 160 (15 January 1976)

The author suggests that the presence of persistent industrial pollutants partially accounts for the large scale changes in North Sea phytoplankton communities detected since the mid-1960s by the Continuous Plankton Recorder survey and described by P.C. Reid (Nature 257, 217-9 (1975). The observed decline in diatom populations, possible increase in microflagellate abundance, and a decline in the zooplankton biomass could not be easily explained by eutrophication and climatic changes alone, according to Reid. Sensitivity to low levels of industrial waste products, such as heavy metals, petroleum hydrocarbons, and stable chlorinated hydrocarbons by marine phytoplankton has been demonstrated by general researchers. The author recognizes that many other environmental factors affect these biological systems as well.

38-0047
GENERAL INFORMATION

Anon
WARNING ON KEPONE
Chem. Week 118 (2): 18 (14 January 1975)

Of the 36 formulators, shippers, packagers and handlers of Kepone recently contacted by OSHA about 19 were still using the chlorinated pesticide. OSHA instructed the users to limit their employees' exposure to Kepone and requested that concentrations of the chemical be monitored and measured in the workplace. The companies can expect to be inspected to determine the adequacy of control methods, of personal protective equipment, of training in proper handling and of records relating to Kepone.

38-0048
GENERAL INFORMATION

Anon
HEALTH EFFECTS OF THE PESTICIDE KEPONE. . .
Chem. Eng. News 54 (3): 34 (19 January 1976)

Researchers at the Medical College of Virginia have a one-year contract with the National Institute of Environmental Health Sciences to study the health effects of Kepone and to develop therapy for those affected by the pesticide. More than half of the 110 or more workers at plant in Hopewell, Va., which produced Kepone, have high levels of the pesticide in their blood. Twenty workers have been hospitalized with various neurological disorders.

38-0049
GENERAL INFORMATION

Carpenter, C.P. et al
PETROLEUM HYDROCARBON TOXICITY STUDIES. VI. ANIMAL AND HUMAN RESPONSES TO VAPORS OF "60 SOLVENT"; VII. ANIMAL AND HUMAN RESPONSES TO VAPORS OF "70 SOLVENT"; and VIII. ANIMAL AND HUMAN RESPONSE TO VAPORS OF "140° FLASH ALIPHATIC SOLVENT"
Toxicol. Appl. Pharmacol. 34 (3), 374-94; 395-412; 413-29 (December 1975)

These three studies paralled the work performed by the same authors on varnish makers' and painters' naphtha, Stoddard solvent, rubber solvent, and mixed xylenes. A stepwise approach was used to determine a no-ill-effect inhalation level in rats and dogs. Based on results of inhalation studies with animals and sensory response of human subjects described in these investigations, hygienic standards are suggested: 0.44 mg/liter (90 ppm) concentration of "60 Solvent", 0.32 mg/liter (59 ppm) concentration of "70 Solvent", and 0.23 mg/liter (37 ppm) concentration of "140° Flash Aliphatic Solvent."

38-0050
GENERAL INFORMATION

Anon
REPORT TO THE CONGRESS ON OCEAN DUMPING RESEARCH, JANUARY THROUGH DECEMBER 1974, PUBLIC LAW 92-532, TITLE II SECTION 201.
NOAA-75091603, COM-75-11410, National Oceanic and Atmospheric Administration, Washington, D.C. (June 1975)

This is the second annual report submitted to Congress on the federally sponsored research on the effects of ocean dumping, as required under Section 201. The report describes significant Federal research programs and activities carried out in 1974. It also includes a summary of 1974 studies relative to the requirements of Section 203. It contains sections on research on ocean disposal of dredge and nondredged material, dumpsite characterizations, Coast Guard R & D for ocean dumping surveillance and enforcement, dredged material disposal in the Great Lakes, and research on alternatives to ocean dumping. During 1974 approximately 130 million tons of material were dumped in U.S. coastal waters. Dredged material accounted for 118 million tons, or over 90% of the total tonnage dumped in 1974. Dredged material is an environmental concern because of the large quantities involved and the presence of contaminated sediments. The ocean disposal of wastes other than dredged materials occurs mainly in the New York Bight.

[Abstract in: NTIS Weekly Government Abstracts, Medicine and Biology, p.6 (5 January 1976)

38-0051
GENERAL INFORMATION

Lee, Richard F.
FATE OF PETROLEUM HYDROCARBONS IN MARINE ZOOPLANKTON
NSF/IDOE-75-31, PB-245-699. Published in Conference on Prevention and Control of Oil Pollution Effects pp. 549-53, Skidaway Institute of Oceanography, Savannah, Georgia (1975)

The work described in the paper is concerned with the uptake, metabolism, storage, and discharge of petroleum hydrocarbons by marine zooplankton, an important link in the marine food web. Both paraffinic and polycyclic aromatic hydrocarbons were added to seawater containing various species of zooplankton collected off California, British Columbia, and in the Arctic. Uptake was linear for 24 hours with no further increase in stored hydrocarbon after that time. Most ingested hydrocarbon was metabolized and discharged by the various crustacean species although a small percentage (less than 1% of the ingested hydrocarbon) was stored by all species even after a long depuration time. Preliminary work has suggested that hydrocarbons are metabolized and discharged at a greater rate when absorbed to ingested algae. No metabolism of hydrocarbons by the algae cells was noted. Also, alkylated aromatic hydrocarbons appear to be metabolized at a higher rate than the nonalkylated aromatic hydrocarbons.

[Abstract in: NTIS Weekly Government Abstracts, Medicine and Biology p.6 (5 January 1976)]

McNutt, Neil S. and Amster, Robert L.
HEPATIC LESIONS IN MICE AFTER CONTINUOUS INHALATION EXPOSURE TO 1,1,1-'TRICHLOROETHANE
AD-A017-247, Published in Laboratory Investigation 32 (5): 642-54 (1975)

Male CF-1 mice (24-34 gm.) were exposed to either 250 ppm or 1000 ppm of 1,1,1-trichloroethane in air continuously for 14 weeks; control mice were exposed to room air. Serial sacrifice of exposed and control mice demonstrated significant changes in the centrilobular hepatocytes of animals in the 1000 ppm group. Moderate liver triglyceride accumulation was evident in the 1000 ppm group and peaked at 40 mg. per gm. of tissue (wet weight) after 7 weeks of exposure. Partical recovery was indicated by a decrease in the hepatic triglyceride level to 16 mg. per gm. by 14 weeks of exposure to 1000 ppm. Electron microscopic evaluation revealed that cytoplasmic alterations were most severe in centrilobular hepatocytes in the 1000 ppm group and were mild to minimal in the 250 ppm group. These alterations consisted of vesiculation of the rough endoplasmic reticulum, with loss of attached polyribosomes, increased smooth endoplasmic reticulum, microbodies, and triglyceride droplets. Necrosis of individual hepatocytes occurred in 40% of the mice exposed to 1000 ppm for 12 weeks. Comparison of these findings to results obtained by other investigators studying dichloromethane indicates that these pathologic alterations were similar to those observed with dichloromethane, except for different time courses of the effects and different degrees of recovery. The toxic effects of 1,1,1-trichloroethane were similar to but less severe than those produced by carbon tetrachloride.

[Abstract in: NTIS Weekly Government Abstracts, Medicine and Biology p. 12 (5 January 1976)]

39-0001
ARSENIC

Gills, T.E. et al
DETERMINATION OF TOXIC TRACE ELEMENTS IN BODY FLUID REFERENCE SAMPLES
PB-246 786. Pub. in Proc. Ann. Conf. on Trace Substances in Environ. Health (8th), Missouri-Columbia Univ., 11-13 June 1974, 8, 273-80 (1974)

The measurement of elemental concentration in body fluids has been widely used to give indication of exposures to certain toxic materials and/or a measure of body burden. To understand fully the toxicological affect of these trace elements on the physiological system, meaningful analytical data is required along with accurate standards. A number of reference samples containing selected toxic trace elements in body fluids have been prepared. The reference samples include mercury in urine at three concentration levels, and lead in blood at two concentration levels. These reference samples have been found to be extremely useful for the evaluation of field and laboratory analytical methods for the analysis of toxic elements.

[Abstract in: NTIS Weekly Government Abstracts, Medicine and Biology, p.77 (26 January 1976)]

39-0002
ARSENIC

Zook, Elizabeth G. et al
NATIONAL MARINE FISHERIES SERVICE PRELIMINARY SURVEY OF SELECTED SEAFOODS FOR MERCURY, LEAD, CADMIUM, CHROMIUM, AND ARSENIC CONTENT
J. Agric. Food Chem. 24 (1): 47-53 (January - February 1976)

The results of a screening study to determine the mineral concentrations in fish consumed in the U.S. delineates the microconstituent content of arsenic, mercury, lead, cadmium, and cobalt in 34 kinds of seafood. A higher concentration of arsenic than of any other of the tested elements was reported, the overall arsenic mean being 2.6 ppm compared to less than 0.2 ppm for cadmium, less than 0.4 ppm for chromium, less than 1 ppm for lead, and 0.13 ppm for mercury. However, fish as a rule are known to show relatively high levels of arsenic, and the arsenic in shrimp, for example, exists in a form not readily assimilated by humans or animals.

39-0003
ASBESTOS

Gunter, Bobby J.
HEALTH HAZARD EVALUATION/TOXICITY DETERMINATION REPORT 73-149-140, FEDERAL-MOGUL CORPORATION, GALLIPOLIS, OHIO
PB-246 460. NIOSH-TR-HHE-73-149-140 (June 1974)

The National Institute for Occupational Safety and Health (NIOSH) in response to a request received from a representative of employees conducted a health hazard survey to evaluate worker exposure to iron, copper, total dust, asbestos, and carbon monoxice at the Federal-Mogul Corporation, Gallipolis, Ohio, during the manufacture of automobile transmission parts. Based upon results obtained from environmental observations, medical questionnaires, and the Industrial Hygienist's personal observations, it was determined that a health hazard did exist at the time of the evaluation.

[Abstract in: NTIS Weekly Government Abstracts, Medicine and Biology, p.56 (19 January 1976)]

39-0004
ASBESTOS

Menis, O. et al
THE APPLICATION OF THERMOANALYTICAL METHODS TO THE ENVIRONMENTAL HEALTH PROBLEMS
PB-247 009. Pub. in Proc. of ICTA Conference (4th), Budapest, Hungary, 8-13 July 1974, Chapter in Thermal Analysis 3, 127-39, 1975.

Differential thermoanalysis methods provided an independent measurement of quartz and chrysotile asbestos in the preparation of calibration standards needed by environmental control agencies. It was found that 30-500 micrograms of chrysotile asbestos could be measured with a relative standard deviation of 15 percent. Sealed silver containers were used to provide a self-generating atmosphere which reduced the spread of the dehydroxylation peak and improved both selectivity and sensitivity. A repeat-measurement of the thermal curve, after the dehydroxylation, provided a correction for the matrix baseline. Under similar experimental conditions, microgram quantities of quartz were determined with a relative standard deviation of approx. 2 percent. However, there was a 50 percent difference between the NBS-ICTA SRM 759 and commercially prepared material. It was shown that this difference could be eliminated by thermally treating the commercial product.

[Abstract in: NTIS Weekly Government Abstracts, Medicine and Biology, p.75 (26 January 1976)]

Anon
ASBESTOS-FREE TALC
Rubber Age 108 (1): 56 (1976)

Available from Pennsylvania Minerals & Mining Co., Aspers, Pa., the asbestos-free talc, SER-X, is a hydrous alumina silicate that can be used in dusting molds, as a basic rubber filler, and as a means of keeping rubber layers from sticking to each other.

Ferber, Kelvin, H. et al
AN ASSESSMENT OF THE EFFECT OF IMPROVED WORKING CONDITIONS ON BLADDER TUMOR INCIDENCE IN A BENZIDINE MANUFACTURING FACILITY
Am. Ind. Hyg. Assoc., J. 37 (1): 61-8 (1976)

The hazards of benzidine as a bladder carcinogen were reported as early as 1940, and the potential carcinogenicity of benzidine sulfate was recognized about 10 years later, at which time industry began to study the problem. About 1950, Allied Chemical undertook a study of the manufacturing processes in its Buffalo dye manufacturing plant and during the next five years developed a fully enclosed wet process for benzidine sulfate aimed at reducing worker exposure to all forms of benzidine.

A statistical analysis of records accumulated in the ensuing years shows that the new process significantly reduced the number of bladder tumors among employees. No bladder tumors have occurred in any worker employed since the first of 1955.

Versar, Inc.
PRELIMINARY INVESTIGATION OF EFFECTS ON THE ENVIRONMENT OF BORON, INDIUM NICKEL, SELENIUM, TIN, VANADIUM AND THEIR COMPOUNDS. VOLUME I - BORON.
PB-245 984. EPA/560/2-75/005a (August 1975)

This first in a series of reports on the title materials covers: boron industry in the United States; production; uses of boron compounds; current practices; environmental contamination; monitoring and analysis; chemical reactivity; biology; environmental effects; toxicity; current regulations and effects levels; and standards.

[Abstract in: NTIS Weekly Government Abstracts, Medicine and Biology, p.31 (12 January 1976)]

Anon
PEI POLYMERS...INFINITE MODIFICATIONS, PRACTICAL VERSATILITY
The Dow Chemical Company. Brochure, Form No. 192-328-74

Physical properties, reactions, applications, storage and handling, safety considerations and disposal of polyethyleneimine (PEI) polymers are discussed. Although PEI products are not considered to be serious health hazards "under anticipated conditions of operation", they can cause eye and skin irritation on contact and should be carefully handled to minimize generation of dusts or mists. According to tests on rats and dogs, PEI products show low repeated ingestion toxicity, but overexposure caused injury to the kidney and liver.

39-0009
FLUOROCARBONS

Anon
ECONOMIC IMPACTS ASSESSED FOR FLUOROCARBONS BANS. . .
Chem. Eng. 83 (2): 55 (19 January 1976)

If all uses of the fluorocarbons, F-11 and F-12, and of carbon tetrachloride were banned in the U.S., there would be a 92% decrease in emissions over a 20-year period. This decrease would ease the ozone depletion threat, according to an Arthur D. Little, Inc. report to the EPA, but would impose a severe economic impact on numerous industries. Some 15 compounds that could cause ozone depletion are listed; 18 alternative regulatory actions are considered in light of their economic effects on F-11, F-12, CCl_4, and on F-22 and methyl chloroform.

39-0010
FLUOROCARBONS

Anon
BALLOON PROBES SEEK FLUOROCARBON DATA
Chem. Eng. News 54 (5): 5-6 (2 February 1976)

In conjunction with the National Oceanic & Atmospheric Administration, researchers at the University of Wyoming, Laramie, will launch balloon probes to study the reactions of chlorofluorocarbons 11 and 12 at more than 50,000 feet above the earth. The study will also investigate the possible effects of nitric oxide on stratospheric ozone.

Koshy, K. Thomas et al
PHOTOLYSIS OF BENZOIC ACID 2-(2,4,6-TRICHLOROPHENYL)HYDRAZINE
J. Agric. Food Chem. 23 (6): 1084-8 (November - December 1975)

By use of TLC, GLC, and GLC-MS, eight photolysis products of benzoic acid 2-(2,4,6-trichlorophenyl)hydrazide were identified. Of these, the two major products were benzoic acid 2-(2,4-dichlorophenyl)hydrazide and 2,4,6-trichlorobenzophenone.

The title hydrazide, which is the main hydrolysis product of the miticide, benzoyl chloride (2,4,6-trichlorophenyl)hydrazone, was investigated because it was found as a residue on citrus leaves sprayed with the hydrazone miticide.

39-0012
MODEL ECOSYSTEMS

Wallis, Ian G.
MODELLING THE IMPACT OF WASTE ON A STABLE FISH POPULATION
Water Res. 9 (12): 1025-36 (1975)

Analytical and simulation studies of a model developed to determine the effects of waste discharges on a stable fish population indicate the usefulness of a simple model and show that biomass is a sensitive means of describing mortality changes in environments with comparatively small fluctuations.

39-0013
MODEL ECOSYSTEMS

Hart, F.L. and Helfgott, T.
BIO-REFRACTORY INDEX FOR ORGANICS IN WATER
Water Res. 9 (12): 1055-9 (1975)

A refractory-index classification is described and shown to be a useful measure of persistence of materials usually found in the ecosystem. The studies indicate that certain common organic compounds, which resist degradation for a long time, should be prevented from entering the waterways, if possible.

39-0014
MODEL ECOSYSTEMS

Harrison, Elizabeth A.
ECOSYSTEM MODELS (A BIBLIOGRAPHY WITH ABSTRACTS).
NTIS/PS-75/846

The bibliography contains abstracts which cover marine biology, natural resources, wildlife, plants, water pollution, microorganisms, food chains, radioactive substances, limnology, and diseases as related to ecosystem models. (Contains 214 abstracts)

[Abstract in: NTIS Weekly Government Abstracts, Medicine and Biology, pp. 49-50 (19 January 1976)]

39-0015
MODEL ECOSYSTEMS

Russell, Clifford S.
ECOLOGICAL MODELING IN A RESOURCE MANAGEMENT FRAMEWORK.
PB-246 665. RFF Working Paper-QE-1, ISBN-0-8018-1773-0, NOAA-75101506 (July 1975). (Available from Johns Hopkins Univ. Press, Baltimore, Md. 21218 at $6.00)

The report is a collection of papers concerning both physical and ecological modeling for a number of specific locations. Titles of the papers are: Ecological modeling in a resource management framework: An introduction; CLEANER: The Lake George model; A discussion of CLEAN, The aquatic model of the Eastern deciduous forest biome; The Delaware Estuary model; Application of mathematical models to the study, monitoring and management of the North Sea; Phytoplankton models and eutrophication problems; Fish population models; Potential and actual links to ecological models; Fisheries and ecological models in fisheries resource management; Management of large-scale environmental modeling projects; and Present problems and Future prospects of ecological modeling.

[Abstract in: NTIS Weekly Government Abstracts, Medicine and Biology, p. 50 (19 January 1976)]

39-0016
MODEL ECOSYSTEMS

Bull, Don L. and Ivie, G. Wayne
METABOLISM OF *O*-ETHYL *O*-[4-METHYLTHIO)PHENYL] *S*-PROPYL PHOSPHORODITHIOATE (BAY NTN 9306) BY WHITE RATS
J. Agric. Food Chem. 24 (1): 143-6 (January - February 1976)

The title compound, an experimental organophosphorus insecticide having fairly low mammalian toxicity (acute oral LD_{50} for rats: 227 mg/kg), was rapidly metabolized and excreted by rats who had received an oral dose of 10 mg/kg. Approximately 92% was excreted in the urine in 24 hr. Radioactive residues peaked in all tissues 2 hr after treatment (0.84 ppm, blood; 0.25 ppm, brain; 4.27 ppm, liver; 8.38 ppm, kidney; 0.25 ppm, muscle; and 1.20 ppm, fat) but dropped to less than 0.1 ppm after 72 hr.

39-0017
MODEL ECOSYSTEMS

Ivie, G. Wayne et al
METABOLIC FATE OF *O*-ETHYL *O*-[4-(METHYLTHIO)PHENYL-^{14}C] *S*-PROPYL PHOSPHORODITHIOATE (BAY NTN 9306) IN A LACTATING COW
J. Agric. Food Chem. 24 (1): 147-51 (January - February 1976)

The title compound, a promising experimental insecticide, was not rapidly absorbed by a cow who had been given a 0.12 mg/kg oral dose. Residues in venous blood reached a maximum in 12-24 hr after treatment but were never higher than 0.005 ppm. During the 6 days following treatment, about 90% of the dose was excreted via the urine, about 0.1% in milk, and the rest in the feces. The cow, given a second dose of 0.62 mg/kg ten days after the first dose, was sacrificed 12 hours later. Tissue analysis revealed low residues, the highest being 0.21 ppm in the kidney. Major metabolites apparently are not toxicologically significant.

Brown, Lewis R. et al
THE EFFECT OF MIREX AND CARBOFURAN ON ESTUARINE MICROORGANISMS
PB-247 147. EPA/660/3-75/024 (March 1975)

The purpose of the investigation was to help establish the chemical, physical and micro-biological fate of mirex and carbofuran in the estuarine environment and determine the effect(s) on important estuarine microorganisms and their activities. Chemical studies on the adsorption, fate and hydrolysis were conducted. The micro-biological studies involved the use of both pure cultures and mixed cultures in a microcosm system and included twelve distinct physiological groups of microorganisms. It was concluded that neither mirex nor carbofuran would have a deleterious effect on estuarine bacteria under normal conditions, and there was no evidence of bioaccumulation. Degradation products of both compounds were shown to be toxic to some microorganisms.

Kevy, Sherwin V. et al
TOXICOLOGY OF PLASTIC DEVICES HAVING CONTACT WITH BLOOD
PB-247 168. NIH/NHLI-72-2969-CR (October 1975)

The objectives of this research were twofold: (1) the utilization of an animal model to evaluate the functional effect of Di-2-ethylhexylphthalate (DEHP) accumulation, and (2) the development of an in vitro testing procedure that could be correlated with the animal studies. The rate of extraction of DEHP from polyvinyl chloride (PVC) is dependent upon both the temperature during storage and the lipid content of the medium. DEHP so obtained is in true solution, with particle sizes less than 0.22 micron. Tissue culture studies demonstrate that solubilized DEHP in varying concentrations inhibits the growth and ultimately kills human diploid fibroblasts. PVC and siliconized glass transfused rhesus had abnormalities in liver histopathology and liver functions for up to 14 months following cessation of transfusions. DEHP or silicon persisted in the tissues for up to 14 months post-transfusion. Both the control rhesus and those transfused with platelets processed in polyethylene containers were normal.

[Abstract in: NTIS Weekly Government Abstracts, Medicine and Biology, p.68 (26 January 1976)]

Jellinek, H.H. G. and Takada, K.
TOXIC GAS EVOLUTION FROM POLYMERS: EVOLUTION OF HYDROGEN CYANIDE FROM LINEAR POLYURETHANE
J. Polym. Sci., Polym. Chem. Ed. 13 (12): 2709-23 (1975)

Linear polyurethane was heated (from about 260 to 480°C) in the presence and absence of oxygen and the evolution of HCN was determined as a function of time, temperature, oxygen pressure, film thickness, and chain length. The mechanisms of thermal oxidative degradation are compared with those of thermal degradation.

Bloom, T.F. et al
HEALTH HAZARD EVALUATION/TOXICITY DETERMINATION REPORT 73-151-141, ESSEX WIRE CORPORATION, KENTON, OHIO
PB-246 461. NIOSH-TR-HHE-73-151-141 (August 1974)

NIOSH received a request to evaluate employee exposure to trichloroethylene used as a solvent in degreasing operations and to dodecyl-succinic anhydride used as an epoxy hardener in the epoxy molding area at a plant manufacturing ignition coils. It was determined on the basis of environmental measurements that trichloroethylene and dodecyl-succinic anhydride were not toxic at the concentrations found at the time of the survey. However, historical accounts suggest that past environmental exposures may have been at toxic concentrations.

[Abstract in: NTIS Weekly Government Abstracts, Medicine and Biology, p.56 (19 January 1976)]

Blinova, E.A. and Janes, H.
THE EXPERIMENTAL TOXICOLOGICAL CHARACTERISTICS OF THE BASIS PRODUCTS OF THE SHALE CHEMICAL INDUSTRY
PB-246 833-T. EPA-TR-76-55. (August 1975)

The report discusses the toxicological effects of the products of thermal processing of shale (tars and phenols). Experiments were conducted to determine the effects of these products on guinea pigs after inhalation and contact with the skin. The experimental results indicate that shale tars and phenols produced in the Estonian SSR are irritants and [after] a period of exposure affect the skin. Other physiological effects are noted.

[Abstract in: NTIS Weekly Government Abstracts, Medicine and Biology (19 January 1976)]

39-0023
SHALE OIL EXTRACTION AND REFINING

Prescott, James H.
SOVIET OIL-SHALE PROCESSES OFFERED FOR U.S. LICENSING
Chem. Eng. 83 (3): 66-7 (2 February 1976)

Operating details and cost data for two Soviet oil-shale processes, the Kiviter process and the Galoter process, are described briefly. The Soviets are offering the processes for U.S. licensing. Capital costs would probably run higher in the U.S. because of environmental pollution control equipment and other factors.

39-0024
VINYL CHLORIDE

Anon
VINYL MAKERS READY TO CLEAR AIR
Chem. Week 118 (4): 33 (26 January 1976)

Industry is apparently not going to fight EPA's proposed standards for regulating air emissions from VC and PVC plants, although the cost of the control techniques to be required will run high. A price increase in finished products is anticipated.

39-0025
VINYL CHLORIDE

Lao, R.C. et al
IMPROVED METHODS FOR SAMPLING AND ANALYSIS OF VINYL CHLORIDE
Am. Ind. Hyg. Assoc., J. 37 (1): 1-7 (1976)

Gas chromatography provides a means for accurate and reliable detection of vinyl chloride in ambient and in-plant atmospheres. The authors describe results achieved with various sample types.

39-0026
VINYL CHLORIDE

Anon
VINYL CHLORIDE MONOMER -- HANDLING AND PROPERTIES
PPG Industries, Chemical Division, 1975

In 1975, PPG stood as a major supplier of vinyl chloride monomer, having a 900 million-lb/yr capacity in its Louisiana and Puerto Rico facilities. This brochure describes the company's work practice guidelines, following OSHA recommendations; gives the properties and hazards of VCM; discusses handling and unloading procedures; disposal; and monitoring and analysis.

VINYL CHLORIDE

See: 39-0019, Phthalates

Going, John and Long, Sue
SAMPLING AND ANALYSIS OF SELECTED TOXIC SUBSTANCES TASK II - ETHYLENE DIBROMIDE
PB-246 213. EPA/560/6-75-001 (September 1975)

Ethylene dibromide has recently been reported by the National Cancer Institute to be a potential carcinogen. Its commercial use is predominately as a scavenging agent for lead in gasoline. A minor usage is a pesticide fumigant. A protocol was developed for the sampling and analysis of ethylene dibromide in ambient air and surface water. The range in concentration of ethylene dibromide in the air and the site where it was collected are as follows; manufacturing sites, 4.2 to 115 micrograms per cu m oil refinery, 0.23-1.65 micrograms per cu m; urban locations near retail gasoline stations and with heavy vehicular traffic, 0.069 to 0.11 micrograms per cu m. Two water samples collected from streams near an oil refinery and a manufacturing site were found to contain 1.13 and 1.05 parts per billion ethylene dibromide, respectively. Further work to clarify ambient air levels and to assess whether they may represent a health risk is anticipated, but the verv low levels detected to date are not thought to present a significant risk to health.

[Abstract in: NTIS Weekly Government Abstracts, Medicine and Biology (19 January 1976)]

39-0028
NITROSAMINES

Read, John
THE LETHAL EFFECT ON BACTERIA OF DIMETHYLNITROSAMINE USED WITHOUT AN ACTIVATING AGENT
Mutat. Res. 33 (2/3): 107-12 (December 1975)

Survival curves obtained when various strains of E. coli and Salmonella were treated with the oncogenic agent dimethylnitrosamine (DMN) in solutions of varying concentrations are discussed. The results indicate the lethal effect of DMN on bacteria is due to its attacking the deoxyribonucleic acid (DNA) of the bacteria. The damage can be repaired by those systems that repair damage caused by UV light or X radiation.

39-0029
NITROSAMINES

Fisher, C.R. et al
MUTAGENICITY OF ACTINOMYCIN D IN NEUROSPORA CRASSA
Mutat. Res. 33 (2/3): 187-92 (December 1975)

Actinomycin D (Act D), used as an antineoplastic agent, as an inhibitor of DNA-dependent RNA and protein synthesis, has been reported as a potent teratogen, a carcinogen, and a mutagen. In this study, Act D induced purple adenine-requiring mutants (ad-3) in wild-type Neurospora crassa

Average mutation frequency was $3.6/10^6$ survivors. The spectrum of complementation types closely resembles that of mutants induced by ICR-170, which induces base-pair insertions or deletions, or the spectrum of X ray-induced or spontaneous mutants.

The spectrum is quite different from that induced by nitrous acid or N-methvl-N'-nitro-N-nitrosoquanidine, which induce mostly base-pair substitutions.

39-0030
NITROSAMINES

Liwerant, Irene Joab and Da Silva, Luiz H. Pereira
COMPARATIVE MUTAGENIC EFFECTS OF ETHYL METHANESULFONATE, N-METHYL-N'-NITRO-N-NITROSOGUANIDINE, ULTRAVIOLET RADIATION AND CAFFEINE ON *DICTYOSTELIUM DISCOIDEUM*
Mutat. Res. **33** (2/3): 135-46 (December 1975)

The frequency of morphogenetic mutants induced by N-methyl-N'-nitrosoguanadine (MNNG), ethyl methanesulfonate (EMS), UV radiation, and caffeine on the cellular slime mold *D. discoideum* are reported. MNNG was the most efficient mutagenic agent of those tested, inducing a high frequency of morphogenetic mutants with relatively low cell killing.

39-0031
GENERAL INFORMATION

Anon
MONSANTO PLANS TO STOP MAKING PCB's
Chem. Eng. News 54 (5): 4-5 (2 February 1976)

Monsanto, the sole producer in the U.S. of polychlorinated biphenyls (PCBs), is phasing out of the business, producing now only about 40 million lb/yr compared to 72 million in 1970. Presently produced PCBs are used only for closed electrical systems - transformers, capacitors, for example - for which use no satisfactory substitute yet exists. Despite slow down in production, PCB contamination of fish and wildlife seems to be on the increase, and Monsanto plans eventually to stop production completely.

39-0032
GENERAL INFORMATION

Anon
ELECTRIC POWER FROM SPACE PROPOSED
Chem. Eng. News 54 (4): 5 (26 January 1976)

Satellite power stations to collect solar energy in space and return it to earth as microwave radiation were described by the Boeing Co. and by Arthur D. Little, Inc. to the Senate Subcommittee on Aerospace Technology & National Needs. Boeing claims its Powersat could yield up to 10,000 Mw of electrical energy but at an immense cost. The ADL solar power station at a cost of $7.6 billion could provide about 5000 Mw of usable electric power.

39-0033
GENERAL INFORMATION

Kohn, Philip M.
OCEAN THERMAL GRADIENTS BECKON ENERGY PLANNERS
Chem. Eng. 83 (3): 53-5 (2 February 1976)

Use of the sea as a heat source and a heat sink for generating electricity may be one way of solving the energy crisis. Conceptual designs indicate that the concept could be cost-competitive even though a low thermal efficiency (only 5 to 8%) can be expected. One potential problem is that of biofouling of heat-transfer equipment in the open ocean. The method might be used more successfully as an adjunct to offshore chemical-process-industries plants.

39-0034
GENERAL INFORMATION

Morton, Arthur R. et al
BIOLOGICAL EFFECTS OF TRINITROTOLUENE FROM EXPOSURE BELOW THE THRESHOLD LIMIT VALUE
Am. Ind. Hyg. Assoc., J. 37 (1): 56-60 (1976)

This study shows that in an ammunition plant producing TNT workers exposed to TNT levels of 0.8 mg/m^3 experienced altered taste, respiratory problems, and dermatitis. Medical tests showed 59% of the workers (23 out of 39) to have abnormal high lactic dehydrogenase and 9 of the workers to have abnormal high serum glutamic oxalacetic transaminase. Indications are that the 1.5 mg/m^3 recommended threshold limit value (TLV) of TNT is too high and that for proper worker protection the TLV probably should be 1.5 mg/m^3.

39-0035
GENERAL INFORMATION

Anon
POLLUTANTS FROM A METROPOLITAN AREA CAN MARKEDLY AFFECT AIR QUALITY DOWNWIND...
Chem. Eng. News 54 (4): 18 (26 January 1976)

From a study of atmospheric data from Northern New Jersey, eastern New York, Connecticut, and Massachusetts, Bell Telephone Labs reports that excessive ozone concentrations in Fitchburg, Mass. result from photochemical air pollution in the NYC area, a distance of more than 200 miles.

39-0036
GENERAL INFORMATION

Anon
ANOTHER KEPONE LAWSUIT
Chem. Week 118 (4): 14-5 (28 January 1976)

Some 120 James River commercial fisherman are now suing Allied Chemical, Hooker Chemicals & Plastics, Life Science Products and Wm. F. Moore, Jr., former executive of Life Science Products, the one-time manufacturer of Kepone. The fisherman claim economic losses and damages resulting from their inability to fish the river and its tributaries since Kepone waste has affected all the marine life there.

39-0037
GENERAL INFORMATION

Anon
SENATE PANEL PROBES KEPONE DISASTER
Chem. Eng. News 54 (5): 17-8 (2 February 1976)

In the continuing Kepone saga, former employees of Life Science Products and executives of that now-defunct company and of Allied Chemicals testified before a Senate committee probing for the reasons behind the apparent lack of control of plant operations and the resulting health and environmental ill effects.

39-0038
GENERAL INFORMATION

Anon
KEPONE CAUSES LIVER CANCER IN MICE AND RATS
Chem. Eng. News 54 (5): 19 (2 February 1976)

Unpublished results of NCI tests show that Kepone induced liver cancer in 81% of male mice and 52% of female mice, when fed to the mice in either low or high doses. A smaller percentage of rats developed liver cancer also, but only from high doses of Kepone. As with workers exposed to the pesticide, the animals also developed tremors.

39-0039
GENERAL INFORMATION

Crockett, Pernell W.
ENVIRONMENTAL CARCINOGENS (A BIBLIOGRAPHY WITH ABSTRACTS).
NTIS/PS-75/844 (November 1975)

The bibliography cites research reports on the identification, sources, and toxicity of environmental carcinogens. Included are data on pesticides, fire extinguishing agents, environmental pollutants, and food additives. (Contains 158 abstracts)

[Abstract in: NTIS Weekly Government Abstracts, Medicine and Biology, p.47 (19 January 1976)]

39-0040
GENERAL INFORMATION

Anon
SCIENTIFIC AND TECHNICAL ASSESSMENT REPORT ON CADMIUM
PB-246 820. EPA/600/6-75/003 (July 1975)

The report is a review and evaluation of the current knowledge of cadmium in the environment as related to possible deleterious effects on human health and welfare. Sources, distribution, measurement, and control technology are also considered. Cadmium is widely distributed in the environment. The air over urban areas has contained generally less than 0.1 microgram per cubic meter, 24-hour average, but a 24-hour average as high as 0.73 microgram/cu m has been measured in the air of a community with a known cadmium source. The cadmium content of water generally is less than 1 part per billion although much higher values have been found. The cadmium content in foods varies widely. The estimated intake from foods is 25 to 75 micrograms per day. Food and tobacco smoke are the major sources except in the immediate vicinity of major sources of atmospheric emissions of cadmium. Emphysema and other lung diseases have been related to industrial exposure. Kidney damage has also resulted from long-term exposure to cadmium. Animal experiments link anemia, hypertension, testicular necrosis, and carcinogenesis with cadmium exposure.

[Abstract in: NTIS Weekly Government Abstracts, Medicine and Biology, p.77 (26 January 1976)]

39-0041
GENERAL INFORMATION

Anon
FDA HAS BANNED THE USE OF DYE RED NO. 2....
Chem. Eng. News 54 (4): 7 (26 January 1976)

Effective immediately, Red Dye No. 2 can no longer be used to color foods, drugs or cosmetics. FDA issued the ban on the basis of a study that "suggests" that the dye is a "weak carcinogen". As of 1973, U.S. sales of the dye were about 1.1 million lb, worth $2.9 million.